Preface

The meanings, as well as the challenges that emanate from the decision to build the Virtual Health Library for Latin America and the Caribbean are extraordinary.

This decision was reached by the members of the Latin American and Caribbean Health Sciences Information System on occasion of its Sixth Meeting held at the end of March 1998, in San José, Costa Rica. The System is being coordinated in the regional area by PAHO, through its center BIREME– Latin American and Caribbean Center on Health Sciences Information. It is formed by national systems that operate networks of libraries and documentation centers in health sciences.

All the representatives of the Latin American and Caribbean countries

attending the meeting discussed and approved the Declaration of San José, by which they assumed individually and jointly the commitment to build the Virtual Health Library, in accordance to the proposal submitted by BIREME. At the same time, they urged the national authorities as well as the technical cooperation and development agencies to reorient their programs, actions, and resource application in the same direction. Building the Virtual Health Library represents the articulated and organized response of the libraries and documentation centers in health of the Latin American and the Caribbean countries to the challenge of moving the traditional operation of information products and services to the new paradigm established by Internet.

This act, in itself, reveals once more the effort that, continuously, recurrently, and jointly, hundreds of libraries and documentation centers in health of Latin America and the Caribbean have been devoting, the last three decades, to the processes of renewal and adaptation to new organizational and information treatment paradigms. All these efforts are made with a view to enhancing the fulfillment of its social mission of promoting and implementing the collection, organization, and dissemination of scientific and technical information. This persistence, that characterizes the position of its leaders, and professionals, expresses their awareness of how crucial this task is for the improvement of health. No other meaning seems to precede this one, taking into consideration the enormous difficulties and restrictions of resources, both material and informational, suffered by public institutions in the

area of scientific and technical information.

The proposal of the Virtual Health Library also represents the full reaffirmation of the principle and commitment to operate in network as the central mechanism of technical cooperation in the scientific and technical information process. This cooperation means research, development, and operation of information products and services at national and international levels. The principle of networking is the common denominator characterizing the 30 years of cooperation among libraries and documentation centers in health notwithstanding the successive substitution of several models of operation of products and information services. The emergence of the Internet comes to consecrate this principle.

Another meaning, not less important, is the encouraging panorama that the construction of the Virtual Library presents for the community of health professionals with respect to the fast and efficient access to relevant and up-to-date information. Operating in the Internet, the Library will progressively become a virtual space with a broad collection of the most varied sources of scientific and technical health information of Latin America and the Caribbean. It will provide universal access, regardless location of the users and the servers, and totally compatible with the main international systems. The great expectation for the coming years is a notable progress in the number and quality of available sources of information to the public and, thus, a progress in the degree of satisfaction of information demands.

The Virtual Health Library collection is distinguished from the set of information resources on the Internet because of its quality controls and previously established common methodologies, a condition that has characterized operations of the Latin American and Caribbean System on Health Sciences Information.

The Virtual Health Library will operate comprehensively under the Internet model, particularly, the World Wide Web (WWW) hypermedia service, which means the adoption of a context in which a broad and continuous communication predominates. This context will break gradually the barriers of space and time inherent to the operating environment of information products and services related to hard copy collections. Another determining factor in the communication context promoted by Internet is the predominance of the user initiative that interacts with distributed information sources and/or with other users in an *ad hoc* process to satisfy their information needs.

Certainly, the members of the Regional System, in their decision, visualized the enormous challenge that construction and operation of the Virtual Health Library represents. The challenge begins closely and immediately with the organizational developments that should be implemented in their own information units, and be extended to the reformulation of the *modus operandi* of the networks and national systems of libraries and documentation centers. These organizational developments are necessary so that the libraries and documentation centers adjust and respond locally to the conditions imposed by the model of information treatment that governs operations of the Internet and particularly of the Virtual Health Library.

A fundamental element in the national systems renewal is the expansion of its network of alliances with scientific and technical health information producers and intermediary agents so that all the initiatives and actions converge towards the Virtual Health Library. These alliances will not be limited to health issues since inter-sectoral societies, involving public and private entities and initiatives will certainly contribute with positive results, mainly, in strengthening the information technology infrastructure that serves the institutions and users of the area of health.

It is important to recognize that not all users of scientific and technical health information, current and potential, as well as not all the sources of information will be connected in the Internet in an immediate future. Hence, over a good period of time, the libraries and documentation centers will operate simultaneously products and information services in the traditional, as well as, in the Virtual Health Library. Meanwhile, the priority in infrastructure and/or new sources of information investment should concentrate on the Virtual Health Library. This situation is certainly complex and challenging and it is not easy to anticipate and prepare simple solutions. Hence it is important to be aware that this is a process impregnated with research, experimentation, learning, evaluation, and search for auto-reference, at least in the early years. Intensive communication among the leader and professionals involved, internally in the countries, and among the countries, will be essential to disseminate experiences and achievements.

The Virtual Health Library, in its conception, is not a rupture of the system that currently operates at the regional level and in the

countries. On the contrary, it represents an expansion of the current model in several senses, such as the transfer of the initiative to the user in the process of communication, the expansion of the arch of alliances of producers and intermediary agents, the operation of multimedia information sources, etc.

The promise of an extraordinary expansion for the decentralized operation of information sources is, probably, the meaning of more strategic political character emanating from the proposal of the Virtual Health Library. Its acceptance by the professional community in health will place the VHL as the confluence of the sources of health information generated in all the areas of the health sector of each country. Regionally, this confluence will mold continually and dynamically the virtual space of the Library.

The Virtual Health Library should not become panacea. The debate aimed at criticizing and enriching its formulation, based on the local conditions and under the principle of equity in the access to sources of information and the process of construction and operation of the Virtual Health Library is fundamental. In this regard, two are the objectives that motivated BIREME to publish this book. The first one is to disseminate the proposal of construction of the Virtual Health Library. The second objective is to point out and promote the discussion on the multitude of meanings and challenges that the construction of the Virtual Health Library represents.

Thus, in addition to the *Declaration of San José*, and the basic document formulating the proposal of the Virtual Health Library - *BIREME and the Latin American and Caribbean System on Health Sciences Information: Towards the Virtual Health Library*, this book publishes a selection of conferences presented in the IV Pan American Congress on Health Sciences Information (CRICS IV), carried out jointly with the VI Meeting of the System. These conferences make it possible for us to expand the debate about the construction of the Library considering, not only the intrinsic issues to its formulation, but also the context formed by the complex subjects and challenges facing the Latin American and Caribbean countries, and the inter national agencies, such as, the process of globalization, the promotion of the socioeconomic development particularly in health, the progress in science and technology, and the promotion of technical cooperation.

Abel Laerte Packer
Latin American and Caribbean Center on Health Sciences Information - BIREME, Pan American Health Organization, PAHO/WHO

Health Information for All

George A. O. Alleyne

Director, PAHO - Pan American Health Organization,
Pan American Sanitary Bureau, Regional Office for the
Americas of the World Health Organization

Health Information for All

Opening Conference to
IV Pan American Congress on Health Sciences Information
San José, Costa Rica, March 24th - 27th 1998

Mr. President, distinguished participants, ladies and gentlemen. First let me repeat the warm welcome given by his Excellency President Figueres. There could be no better person to inaugurate over this Congress. We know the interest displayed by President Figueres in health and having read the presentation he made in the World Bank-Canadian Conference on Global Knowledge that took place in Canada about one year ago, we know his commitment to the use of information for health. That conference was one of the more successful ones that explored the role of knowledge and information in sustainable development: I interpreted much of the discussion as being geared to the possibilities of the use and usefulness of knowledge for economic growth, with much emphasis being placed also on the social aspects of what was defined as development.

This evening I propose to address the relevance of information to another aspect to the well-being of individuals and societies –their health. I wish to examine the role information will play in the achievement of Health for All and not only the possibility of information about health —personal or collective-being made widely available and, in some measure, available for all.

There is now a high comfort level with the concept of Health for All. Twenty years ago the World Health Organization challenged the various parts of the world's body politic to find mechanisms for reducing the intolerable burden of illness that afflicted large numbers of people. There were of course loud cries from cynics and Cassandras, who pointed out that the utopian state would never be reached and much time was spent and wasted in debate over the possibility of achieving the goal and the

relevance of its Primary Health Care Strategy. This strategy that was indeed beautifully crafted, was perhaps questioned because of its simplicity which sometimes hid the difficulties that lay behind its implementation.

Now twenty years on, we are putting it to the world that there should be a renewal of our commitment to the noble goal. The position is being articulated much more clearly and I hope more eloquently that Health for All represents a call for more social justice. It represents the notion that there are health situations that still should not exist, that there are health inequities that are within our power to correct, and that we have the means to do so.

This call for renewal of Health for All recognizes the great advances that have been made in spite of the many difficulties that have had to be overcome. In the Region of the Americas we have seen an improvement in many if not most of our health indicators. Our citizens live longer, fewer children die, and fewer mothers die as they give birth. Many of the infectious diseases are on the wane and all—repeat all—are concerned about providing health care for their citizens. Potable water is more widely available.

But this record of progress is tempered by the realization that there is so much more to be done. The fact that some sections of our populations are marginalized and have health indicators that shame us shows what must be done. The reappearance of cholera in some of our countries in epidemic form as a result of El Niño's ravages, shows the fragility of our systems and their inability to respond when they are stressed. The problems of violence, sex or gender determined ill health in women, mental health and

the health damaging behaviour of adolescents are just few of the areas in which we need to advance with the tools we have.

Much of the current economic dogma enshrines the notion of inequality. Charles Handy in his bestseller The Age of Paradox, points out one of the paradoxes of our political and economic system. "Capitalism depends on the fundamental principal of inequality; some may do better than others, but it will only be acceptable in the long term in a democracy if most people have an equal chance to aspire to that inequality." He adds, "This is a no-win world, and unintended." I would propose that there are some areas of our life in which this view may be tempered, and health is one of them.

While it appears that gradients of health status or rather health outcomes seem to be omnipresent, health as a whole is one area in which we do not have to accept a zero sum or no win world. Improving the health status of others does not detract from ourselves and perhaps allows us to act as Adam Smith argues in his less well-known work on a Theory of Moral Sentiments. He begins that work with the following: "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him." He argues that stability in a society must be based on "sympathy", and I would extrapolate to say that to be our brother's keeper in health satisfies that sympathy and in addition is in our self-interest.

In May of this year the World Health Assembly will, I hope, accept the declaration that we should renew our commitment to that goal and en-

dorse the proposal that is being put by the Secretariat after wide consultation with many countries, groups, organizations, and individuals.

The proposal examines the origins of Health for All and emphasizes that as originally conceived it was a "process leading to progressive improvement in the health of people and not as a single finite target." The renewal of the Health for All goal takes us into the 21st Century and acknowledges the gains of the past on which we should build. The major obstacles to more rapid progress have been identified through a series of evaluations and high among these obstacles are a perceived lack of political commitment and the low status of women. The slow economic growth in some parts of the world has hampered the process, and difficulty in achieving intersectoral action remains a problem to be solved. There has been inadequacy of health promotion activities and weak health information systems. The evaluations also pointed out the inappropriate use of, and allocation of resources for high cost technology.

Any renewal of Health for All must take account of the major trends that will influence health such as globalization, environmental and industrial changes and the changing role of the modern State. In this latter context we note that there is increasing clamour to reduce the size of the State and permit the participation of other parts of society in the governance that was formerly the unique province of the State and its apparatus.

The proposal identifies the new bases for action and emphasizes support for some key values such as human rights, equity, ethics and gender sensitivity. Goals and targets are established as benchmarks against which progress will be measured. The role of the World Health Organization in

supporting the renewal is clearly delineated. Among the policy bases for action, special attention is given to the actions needed to make health central to human development. This last point is critical as it in essence enjoins the health sector and us who have some responsibility for policy action in it to be much more aggressive, vocally and programmatically in our relationship with those other sectors that have been in the past seen as more important for enhancing the well-being of our citizens.

I know that this view finds a ready echo here in Costa Rica, where you have shown to the world how the genesis of ideas for human improvement is not determined by the size of the country. Your clear and firm manifestation of the political will necessary to insure that health finds its rightful place in the political arena has always, and I trust, always will merit special recognition and appreciation.

The proposal for renewal of Health for All is a positive and optimistic one and many of the tools to implement the primary Health Care strategy are indeed available. But I wish to emphasize here the critical role of information in the process and show how gatherings like these of information specialists must see their work in that context.

I continue to hold firm to my perception of the value and power of information to effect many of the changes we wish to see. If I may quote myself, I spoke once of, “that most powerful of modern instruments –information– perhaps the only instrument that can close the gap between the world that is and the world that might be—the only instrument that can relieve the ignorance in the coin of ill health and suffering”.

I am obviously not alone in this appreciation. George Will, a columnist, wrote in the Washington Post some years ago:

> *Life is increasingly regressive because the benefits of information are distributed disproportionately to those already favoured by many advantages. The more certain kinds of information matter, the more unequal society –life– becomes.*

I will argue that in the area of health it may be possible to change this by deliberate action and perhaps make life progressive.

Before I go further in elaborating the actual uses of information I should speak briefly about information as a resource –something that is important for our daily living and being. Our primitive forefathers observed the world around them and internalized those facts which they digested and used the knowledge thus acquired for taking decisions. It is evident that they found means of communicating the information by word or other forms. I take this communication to reflect the pristine meaning of the word – to share with others. This basic process has not changed. The technology and skill available for data gathering has changed, there are now more sophisticated methods for analyzing these data, and the means by which this information is shared or communicated is more unrecognizable by the minute. Every one of you here is old enough to appreciate this change in the technology available to us for analysis of data and for communication over the globe. This technology allows us to collect, analyze, store, and retrieve information at speeds and costs that were unthinkable a few short years ago, and the convergence of computer and communica-

tion technological advances and the plummeting costs have revolutionized the way we behave. But the essential element of the process, the internalizing of information such that knowledge is created, is a human action that has been the same since mankind became sentient beings. It will remain so. I am not afraid of the intelligent robots that will be able to store and act on the basis of millions of bits of data. Computers may win chess games, but they do not and will never have the knowledge of having done so.

In his book on the Internet, Telematics and Health, Marcelo Sosa writes of information as the cornerstone of medical sciences and pays tribute to that information giant Dr. Héctor Sosa Padilla, who was a pioneer in assisting PAHO in development of information systems. Dr. Sosa Padilla is quoted thus:

> *The systematic aggregations and structuring of data in space, time, subjects and objects... in the context of decisions that should be taken is what constitutes the true information for the planner, the legislative body, the managerial level or the technician.*

I will constantly stress the fundamental difference between information and knowledge. The creation of knowledge is a highly personal matter and I am to be convinced that we ever transmit knowledge as such. Thus, our Organization cannot be a knowledge organization, to use a popular expression. It is our staff that carry out their tasks on the basis of the knowledge gained from information that has been processed over a lifetime and that knowledge is indeed their most treasured asset. The distinction is not epistemological; it is real in terms of how we function and the tools with

which we work. You are information specialists and it is your knowledge of how to use that information appropriately that makes you valuable.

Information thus conceived is crucial to the attainment of Health for All. First there is the basic need for information about the health situation. It is a sad fact that in many instances our capacity for transmission of information far outstrips our ability to collect basic health data. Fascination with computers has perhaps deviated us from the mundane but important task of collecting vital statistics. The unreliability of data from death certificates is notorious although this has been one of the time-honored sources of information on health conditions.

It is not enough to decry the lack of basic data that can be analyzed. It is an old truism that if data are not useful or used they will not be gathered and therefore not be analyzed to produce information. It is a fundamental tenet of Health for All that there be more equity -less unjustified inequality. Even if we leave aside for a moment the subjectivity implied in the concept of "unjustified", it is clear that there must be a system for determining the existence of such inequality. We are all familiar with the false comfort given by averages for countries. Our thrust is to have data collected from ever smaller geographical units such that there can be appreciation of the inequality that exists not only among but also within countries. My annual Report for 1996 stressed this and highlighted those methodological approaches needed for this discriminatory approach, and the technical cooperation directed towards strengthening the capacity of countries to collect and analyze basic health data. That report analyzed the health situation in the Americas from the perspective of the health of geographically defined spaces. This type of approach gives a picture of the

situation, but also allows countries to measure the effectiveness or otherwise of the interventions they put in place to reduce the inequities.

But in addition to the information about the state of health itself, it is necessary to have information about the determinants of that status, and the health sector itself is increasingly collecting or gaining access to information that may appear to be in the province of another sector. It is important to know of economic and social trends if we wish to interpret health data. It is important to have information on the educational attainment of our populations, and no analysis of a health situation is complete without information on environmental conditions. Information on the mega tendencies such as climate change are important for the long-term view, but the more urgent need is for information on the micro environment that has a direct and immediate bearing on health.

Information must be provided to those who make decisions and often we think only of the truly political actors and not of the other publics. It is in this area that the information needs of Health for All are most acute. If we take the matter of health promotion which is an important aspect of Health for All, the impression is often given that the creation of healthy public policy, which is a cornerstone of that movement, rests primarily with generating knowledge through information conveyed to policy makers. But it is obvious that public policy will be made healthy or healthier if there is sufficient clamour from the general public as a whole or in organized groups. The shift of attention and resources from curative care to promotion and prevention will not take place solely by the actions of well-intentioned disinterested policymakers. Similarly, the dampening of the seemingly limitless demand for individual care will not be possible without

the involvement of an informed public. Unless there is an informed and involved public, we will always be slaves to the old adage - “an ounce of prevention is better than a pound of cure as long as there is nothing to cure.”

As I pointed out initially, I have deliberately not addressed the issue of having health information available to all, as I spoke briefly about that at the last Congress. It is becoming more of a reality that persons are seeking information about health in general from others beside the traditional health workers, and the various means of communication are replete with information about numerous aspects of health.

It is in this context that I posed the question earlier whether the access to information that would facilitate a healthy state or avoid an unhealthy one would lead to some persons or groups being disadvantaged. This is a complex issue as it is not only access to the information, but the means of acting after that information is internalized to knowledge that poses difficulties. The willingness to pay the true cost of taking one or other decision is influenced by other factors beside the wisdom gained from knowledge. There are also exciting new developments in patient monitoring, automation of records, and space-age technology for data capture that will enhance information use. The world of telematics with its emphasis on data transfer is bringing new possibilities such as telemedicine to countries that have the infrastructure in place to take advantage of them.

What can I expect from you as information specialists? Three years ago I said to a similar gathering:

> I look for the day when you will be judged not by the information you have stored but by the numbers who share that treasure with you.

That sentiment is equally true today and I repeat this with particular reference to Health for All and the networking that allows easy access to material related to Health for All. First the deliberations and the proposals of the World Health Assembly must be widely disseminated. The health sector and non-health sector personnel must know that the countries have agreed to recommit themselves to that goal. Next, health sector professionals must have access to the information to make them more competent in their work. Researchers, practitioners, students must have access to the databases on health situations in their and other countries. You must not only know of the location of the information and wait to be asked -you must be advocates for the use of the information to which you are privy. It is not only information on population groups that forms the basis for public health enquiry and action. There will always be need for information about the problems or illnesses of individuals. You as information workers cannot and must not make judgement about the need to collect and store information for individual or population health. Both are important.

You must be among the leaders in your countries in educating the health and non-health sectors of the availability of information that hopefully will engender the formation of knowledge and guide decisions. I stress the universality of access, because it is no longer permissible for you to restrict the use of information to those whom we traditionally refer to as specialists in their field. You have a responsibility to see that information

that should be in the public domain is not guarded by one special group and forms the mechanism by which that group maintains some measure of superiority.

I urge you to give particular attention to providing information for the research that must provide answers to many of the questions that still remain to be answered. A great deal has been written about the research needs of Health for All, but a recurrent theme is to make relevant information available as widely and as rapidly as possible. I recall an old paper by Eugene Garfield in which he likened the spread of scientific information to an epidemic. There was a definitive host – the researcher and the publication is the intermediate host for the infectious material which is information. Part of your responsibility is to facilitate the spread of this infection although I would not go so far as to call you vectors. Of course there is the concomitant responsibility to see that your clients are not so surfeited that they become mentally obese and paralyzed through information over nutrition which would be just as bad as having them waste away through information starvation.

You are privileged to be in this field when there are numerous efforts to liberate information from shackles that are more mental or conceptual than physical or technological. I participated recently in a panel convened by the National Library of Medicine of the United States to plan its international programs. As progressive as that institution has been, it recognizes that it is in the midst of a rapidly changing environment. The panel emphasized the need to "expand efforts in global health information networking." Networks represent the key, and although there may be economic, physical or political barriers at present, these are all being eroded

and the vision is of a confederation of international centers of medical information. The quantum of global health information is increasing at an amazing rate and the only way to deal with it in any rational way is through networking that employs the ever-increasing capabilities of the Internet and the World Wide Web.

You will have the support of PAHO in your efforts. You and the institutions you represent belong to the Latin American and Caribbean System and over the years you have made significant progress in harmonizing practices and procedures. I am always concerned that our support to countries be appropriate to their needs, so last year I appointed a committee to advise me on our technical cooperation in the area of dissemination of scientific technical information in health, with emphasis on the Latin American and Caribbean Center on Health Sciences Information, BIREME, and the Regional System. This committee visited BIREME, institution in Brazil, and other countries of the Region and met with me and my colleagues in Washington. In summary the recommendations of the Committee were that there should be consolidation and strengthening of BIREME in its role as the coordinating center for the Latin American and Caribbean System on Health Sciences Information. The Center should be in a position to attend to the new demands and new users that arise from the scientific and technical developments that are taking place. They also recommended that BIREME work towards the creation of a virtual library and you will hear more of that proposal during the Congress.

I have accepted the recommendations of the Committee and look forward to your reactions to the proposal for the creation of a virtual library. I am convinced that this is the way of the future and my participation in the

NLM panel has shown me that this type of advance is absolutely necessary if scientific and technical information in health is to be the resource that you all wish. This is the proper move to the democratization of information that is needed for Health for All.

In PAHO we will continue to emphasize the need to make information available to our various publics. We will continue our tradition of making scientific publications of the highest quality available to the health workers in the Americas and a program of sustained marketing has made them known in places that they had not previously penetrated. You will have no doubt noticed the publication of our new Journal of Public Health that represents the condensation and replacement of several other periodicals and I believe that the new product has combined all of the good points of its predecessors. Our new news magazine Perspectives combines words and images in a creative and attractive manner to bring key messages about health to a wide readership.

Information and its use or misuse has been a major underpinning of many of the great movements of history. The circulation of information has been crucial to the development of the health sciences and the improvement of the health throughout the ages. It has always been so; it is part of your responsibility to see that it continues to be so. But I can promise you that although your responsibility is a constant, none of us have any real idea of the future in which that responsibility will be discharged. The hope I have is that joined with the responsibility is a willingness to learn and adapt to the inevitable changes in concepts, procedures and practices that will occur. You owe this especially to those for whom Health for All

means a vision that can be transformed into reality and not a pretty slogan coined by the more fortunate.

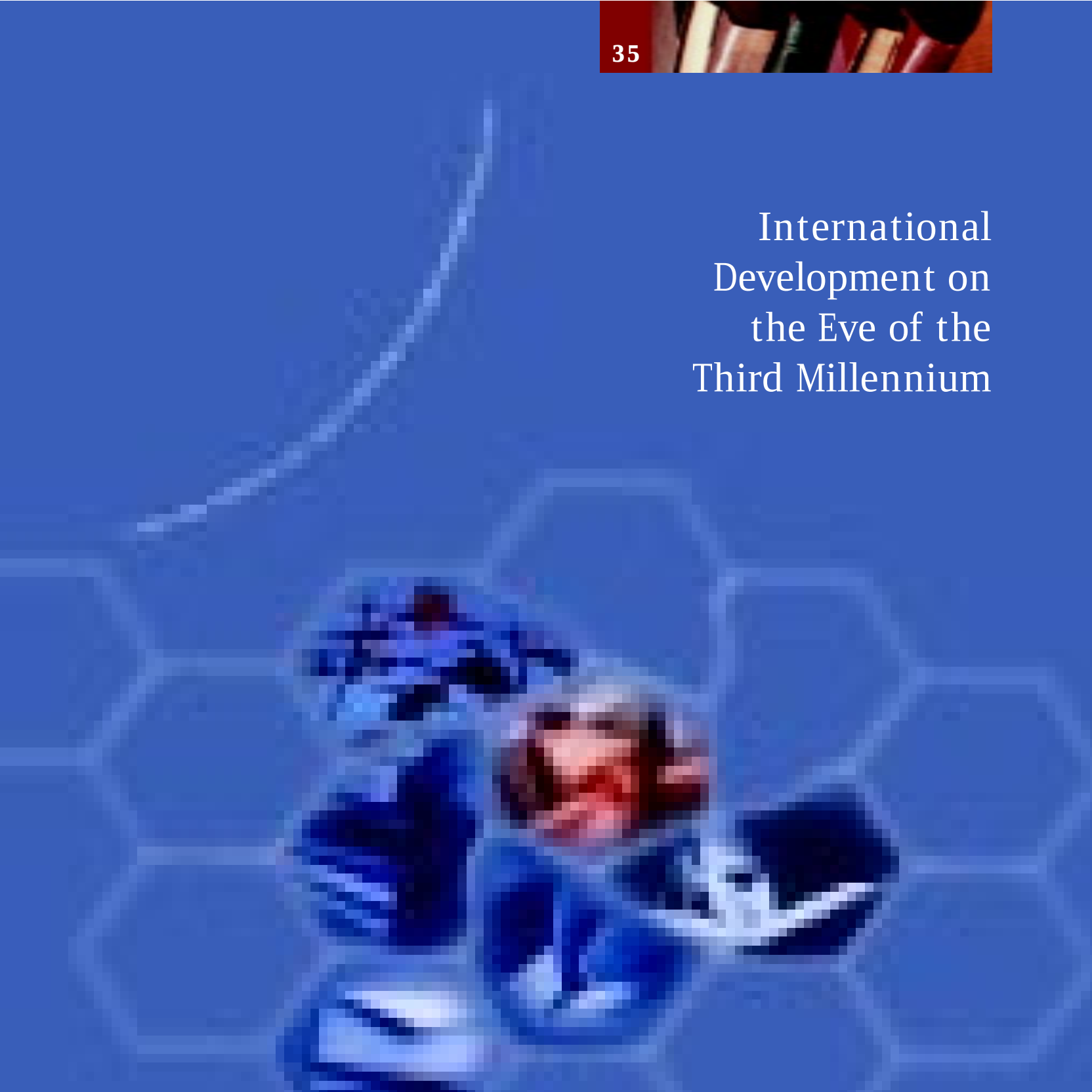
Let me end by quoting Halfdan Mahler as he challenged the World Health Assembly 10 years ago. He said:

> *To steer the movement of Health for All towards the year 2000 and beyond requires dedicated leadership. That leadership is required not only at central levels of government; it is needed at all levels of organized society, and in all walks of life. To provide that leadership people are required whose ennobling ideas and words, and personal example fire the imagination of others and give rise to inspired actions.*

I hope I can count on you to exercise that leadership in your respective places of work.

I thank you.

International Development on the Eve of the Third Millennium

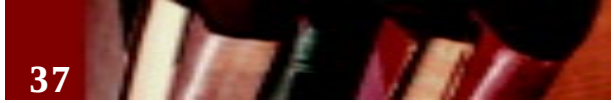


Keith Bezanson

Director, Institute of Development Studies,
University of Sussex, U.K.

International Development on the Eve of the Third Millennium

Keynote Address to
IV Pan American Congress on Health Sciences Information,



First of all, thank you for having invited me to be with you today. Costa Rica is one of my favourite countries and I have long admired the work of PAHO. And these factors make being here as your guest a special honour and a great personal pleasure.

The title of your Congress is "Information Networking: Bridge to the Third Millennium". Now this is a very tantalising title. It speaks to the future - the third millennium — these words sound both hopeful and inspirational. It refers to a bridge, a solid physical metaphor suggesting continuity between where we are and where we are going. And it tells us that information networking is the vehicle or means that will provide continuity and transport us from the second thousand years of Christendom into the third. So this is a most tantalising title.

The question is: are we convinced that the title has it right? If we are, then surely the task of this Congress is to concentrate essentially on one question - the how to do question — how best to do information networking. I would suspect, however, that there are many doubts and concerns in this room. Some of you may be like me in finding the prospect of the new millennium rather bewildering. Also, some of you may question whether there will be very much continuity at all in the world that is unfolding. You may think that, rather than go across a bridge, we are all being forced to leap across a chasm and into what is unfamiliar and undesirable. And some of you may be looking with deep suspicion and even resentment at the new information technologies on which information networking will depend. Indeed, deep in the heart of hearts of a few of you may lie the instincts of a Luddite, anxious to smash the machines and go back to where things were. If some of you feel this way, you would not

be alone. The indications across our world are that there are a great many who have feelings of trepidation about the next millennium and about technology.

The organisers of this Congress have asked me to speak to these issues. Specifically, the terms of reference which were sent to me asked me to do the following:

- First to talk about where we are and where we are going in international development.
- Second, to suggest what the new information technologies are doing for and against people.
- Third, to comment on the implications of information technologies for libraries and for the dissemination of technical and scientific information.
- Fourth, to suggest how the technologies might be applied to meet the needs of people and the challenges of development.
- Fifth, to be "provocative" throughout.
- Sixth to do all of this in about 40 minutes.

Your organisers, in other words, stopped just short of asking me to provide the definitive account of the evolution of human civilisation and of the human prospect for the next one thousand years!

I do exaggerate to make the point, but not by much.

And the point, of course, is that this is far too ambitious and certainly cannot be dealt with any degree of seriousness in 40 minutes. What I will try to do within the time available is far more modest. I will try: first, to

provide a background and context on international development; second, to outline what I believe to be the nature of the real challenge to international development organisations like PAHO in this transition to a new millennium; third, to comment briefly on the new technologies and technological change; and fourth, to offer a brief word about libraries. I will attempt to be provocative in the dictionary definition referring to controversial ideas leading to thinking and discussion about interesting or exciting things.

The Current State of the International Development Effort

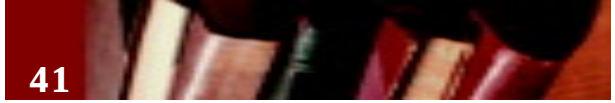
Let me turn, then, to the international development effort in which all of us are engaged.

It strikes me that if you examine the public reports of most international development organisations covering the past 5-10 years - whether bilateral, multilateral or non governmental — you are likely find four things in common. First, most will claim with increasing stridency that development faces a crisis. Second, many present the crisis as essentially financial and appeal for much greater levels of funding in order to bring about development. Third, most organisations have been announcing that they are "reinventing, reengineering or transforming themselves". Fourth, we are all building synergies and new partnerships through information networking.

A major and highly lucrative new industry of management consultants has developed around and guides these common factors and directions. They counsel development organisations on the secrets of future success which include the preparation of new mission statements, strategic orientations, fifth disciplines, business plans, improving both image and presentation, and transformation to reach the new horizons that are aglow with technological possibilities. Not surprisingly, a lot of the literature which international development organisations are producing to define and present themselves to the public and to political leaders is beginning to look a lot like the literature of Proctor and Gamble or Microsoft.

The appeals that are made with a view to obtaining increased support for international development efforts are, of course, numerous and varied. There are, in general, however, two defining characteristics. The first is a positive message involving an appeal to nobility, to our humanity. Essentially, this message rests on the proposition that we should all want to make the world a better place and that we can do so. The second simply turns the message around and attempts to appeal to our fears. This message tells us that if we do not act to eliminate poverty, misery and disease and to save our environment then the consequences on us and on our children will be grave. These two defining characteristics may remind one of words once spoken by the American gangster, Al Capone: "More is accomplished with a kind word and a gun than with a kind word".

Now with the reengineering, transformation and fresh presentation that has been occurring and with all of the expert and expensive advice that has been provided, we would all wish to see evidence that the efforts are succeeding. Alas, the evidence does not provide much encouragement.



Take, for example, the recent publication, The Reality of Aid, based on an independent review of development co-operation for 1997-1998 by ACTIONAID, a leading European NGO. A representative sample of what appears in that publication appears below. The publication concludes that the decline in support for international development has moved from decline and into free fall. The international development effort, it tells us, is in a deepening crisis.

FROM THE REALITY OF AID - 1997-98

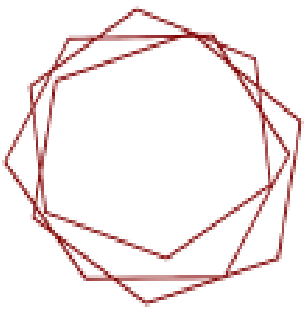
AUSTRALIA: "The new government….kept its election promise to cut the aid program. The 10% real terms reduction ….. represents the greatest cut in a decade."

BELGIUM: "For Belgian development cooperation, 1996 has been another….. lost year."
CANADA: "Repeated and substantial cuts….have been leading many……. To question …….Canadian development assistance…"

FRANCE: "While not reaching the devastating scale of the decline in Italy (42% in real terms) or the USA (27%), the volume of French aid fell more than any other donor…"
GERMANY: "….budget cuts of up to DM500m for the next budget……development cooperation could well fall to a 'negligible quantity'."

JAPAN: "1996 became the year that Japan's ODA was cut dramatically. In dollars, Japanese aid has fallen by 35%….But from FY 1998 there is going to be an (even larger) decrease."

SWEDEN: "For decades, development cooperation constituted an important part of Swedish foreign policy; it was even a central issue within the overall social democratic project…….All that is now history …..The 1997 cut (30% was done without major protests from within Swedish society."



It appears that neither appeals for public and political support nor the new face of reengineered and transformed institutions is succeeding, if success is measured by financial commitments. So what are we to make of this?

Certainly it is not the case that development has ceased to be necessary. Over a billion of humanity still lives in poverty and about half that number in "absolute poverty"; by most accounts the gap between rich and poor is widening; the media remind us with frightening regularity of the risk of new pandemics resulting from the conditions of poverty and environmental destruction; and opinion surveys confirm that the idea of an "interdependent" world has taken hold in the public consciousness. How then do we explain the decline in development?

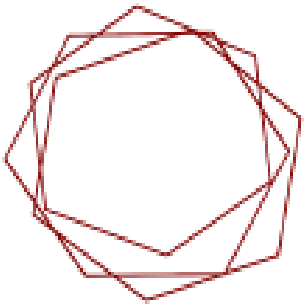
In my view, we can only begin to explain this by understanding that the new post Cold War context in which we are living has transformed dramatically and permanently the very framework that gave rise to the international development effort.

That framework and the socio-political foundations for international development emerged at the close of the Second World War. Development was part of a new age in internationalism. The political and intellectual leaders which brought this about had been formed by the traumas of economic depressions and World Wars and had united in the common cause of "never again". It was the political and economic order that they established that gave rise to the idea of universal development as a socio-political force. This idea was truly revolutionary and produced a totally new international mindset. Before this occurred, the prevailing international view was that most societies were distinct, non-comparable and

destined to remain so; to understand most of them was the stuff of cultural anthropology. The new mindset placed all societies in the world for the first time on a single continuum - the continuum from least to most developed (defined, of course, by the norms of the most developed). All of humanity became comparable and all of us were headed to the same place.

The result has been that, for most of the last fifty years, we have witnessed an inspiring, publicly-funded experiment in international development, arguably the most noble experiment in human history. Its accomplishments have been remarkable when measured by such indices as life expectancy, infant survival, nutrition levels or even poverty elimination. Its failures are also well known and have been recorded in social disruptions, biodiversity loss and environmental destruction.

Whatever its accomplishments and failings, however, this great, publicly-funded experiment was built from and depended on a post-war order that has now largely ceased to exist. In his well known book, The Development Dictionary, Wolfgang Sachs puts it in the following dramatic terms: “The inspiring vision of world development is in ruins. Overtaken by forces that it failed to anticipate, it lives on only by the forces of institutional inertia”.



This formulation by Sachs is, in my view, overstated; it is too journalistic for my liking. The point that I am making is that we have entered a qualitatively new phase in the international system. The further point is that the institutions and the practices of international development are largely unprepared for this. Development has not failed and virtually all

major indicators show that this is the case. The development effort, however, has been overtaken by and risks being swept aside by a tidal force of new events.

If this assessment is correct, what is called for is nothing less than a fundamental re-appraisal of the very meanings of development and progress at a time of unprecedented turmoil in practically all aspects of human activity. This will not be easy, for the fact of today is that, inside or outside governments, there are no dramatic new ideas that command anything like the intellectual consensus or enthusiastic public support on issues of money, trade or development that existed following WWII.

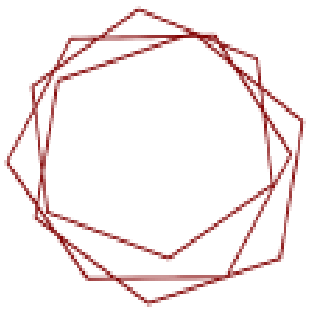
The appropriate starting point for any re-appraisal is to place development issues in their new context of which some of the key elements are the following:

- The development experiment was anchored in the political order of the cold war that disappeared as we entered the 1990s. This has been replaced by the uncertainties accompanying a transition to a new, more complex and less predictable world order. Simultaneously, the international economy is experiencing its most profound transformation since the industrial revolution, including major shifts in trade patterns, the internationalizing of financial markets, and changes in the nature of work and the impact of technological advances. Most development institutions currently have little to do with and almost no influence on these major forces that are shaping our world.

- At the deeper level of society and culture, the time-honored assump-

tions that have underpinned the local social order in many parts of the world are being overturned, often with tragic and savage results, particularly evident in the developing regions and the former socialist countries, but are also increasingly apparent throughout Western society. The complex web of human values and interpersonal relations that enable communities to live together is similarly being subjected to unprecedented strains in many parts of the world. The question for development organisations should go far beyond whether they can provide, for example, blankets, food and shelter to refugees. The question that needs to be addressed is what these social transformations will mean for the human condition and for development.

- And all of this is driven by scientific advances and technological innovations whose pace and impact - both positive and negative - are unprecedented. As a consequence, those with the capacity to absorb, use, and adapt the advances in science and technology will be better placed not only to enrich themselves but also to influence the conduct and evolution of human affairs. Those unable to harness these advances will be increasingly marginalised. With few exceptions, scientific and technological innovations are being driven by private interests. The institutions of international development exert little, if any, influence.



- Development was constructed on the basis of a North-South axis as the dividing line between wealth and poverty. That was essentially a valid reflection of reality in the 1950s and 60s. It has not, however, been the case for at least twenty years. Increasing concentrations of

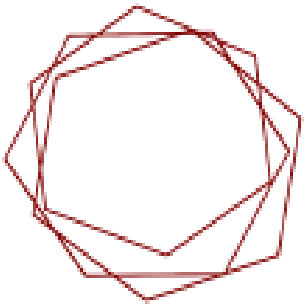
individual wealth are now found in countries that aggregate statistics continue to treat as poor, and vice versa. The next very few seem certain to increase such tendencies. The Economist magazine predicts, for example, that nine of the 15 leading economies in the world will soon be countries that we now call "developing", that China will replace the United States as the world's largest economy, that India will replace Germany as the fourth largest, and that up to 95% of the world's active labour force will live in the South. The old geographic fault line between rich and poor has been replaced with a near-impenetrable patchwork that cuts profoundly within individual societies and which is making increasingly meaningless the aggregate statistics and concepts which are used to understand development. Yet in spite of all of this, many international development organisations - I believe that they are by far the majority - continue to present the world as if the old rich-poor dividing line were still a valid reflection of reality. They are failing badly in coming to terms with new complexities.

It seems to me, therefore, that the international development effort is today in very serious trouble. I have noted that a great deal of institutional effort has been and is being expended in the application of practices borrowed from business and industry, principally reengineering, repackaging or dressing up public relations with the help of expensive consultants. This may be good and necessary, but it is far from sufficient.

The reality is, as I have mentioned, that we are in a qualitatively new phase in the international order. Surely, the institutions founded expressly to bring about development should now be at the forefront of

working through and providing guidance on the meaning of this for future development efforts. They have, after all, much success and a rich experience on which to draw. For the most part, we are not doing this. In his hopeful account of our times entitled "Birth of a New World", (subtitled 'An Open Moment for International Leadership'), the distinguished American scholar and internationalist Harland Cleveland provides convincing evidence that ours is indeed a world crying out for renewed social guidance. His is also a reminder to the international development community that we cannot hope to contribute to this unless we begin first by thinking clearly and by understanding the new context which confronts all of us. It is time for all of us to begin this and to do so together. The old Chinese proverb bears repeating: "If we don't change direction, we'll get to where we're going".

Globalisation: Order and Disorder



I would like to turn for a few minutes to globalisation. This is a word that did not even exist 15 years ago. It is a portentous and wonderful word that means precisely what the user says it means and it has become the most fashionable word of the 1990s. Just as poets and songwriters in an earlier age celebrated the rise of modern nationalism, so in our day governments, businesses, journalists, environmentalists, academics and international organisations write and sing hymns of praise to the global village. Globalisation is the new mantra and, barring a return to protectionism which is improbable at least in the short term, it is not going to go away.

Now what have international development organisations been saying about globalisation? Well, frankly, not much that we can be proud of. Most bilateral and multilateral institutions of international development have placed themselves at the forefront of sweeping claims of the benefits of globalisation. Other development agencies, mainly non-governmental, have situated themselves in resolute opposition to all aspects of globalisation. These opposing positions do not seem to have led to very much of the serious and patient study that is called for, to an open-minded search to understand what is happening, although the recent, dramatic and tragic events in East Asia may be exerting a positive influence in this regard.

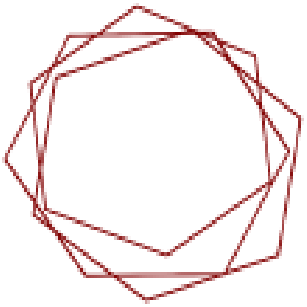
Globalisation is most often portrayed by its advocates as an integrating and homogenising force, but the truth is much more complex in terms of its dynamics and impact. First, it is an *ambiguous* amalgam of potentially contradictory processes which promise both integration and disintegration, inclusion and exclusion, opportunities and problems, equalisation and unequalisation, creation and destruction, mobility and entrapment, order and instability. It is a deeply *uneven* process which operates at different levels through parallel processes of regionalisation; affects different regions and countries differentially and, within countries, different areas and social groups; and advances at different speeds across economic terrains (for example, more rapidly in financial than in labor flows). It is an *unsettling* process which imbues economic transactions, particularly in the realm of finance, with greater volatility and threatens to bring more uncertainty and insecurity into people's lives. It is a *disempowering* process in that it reduces the autonomous power of national governments, undermines the accountability which is the lifeblood of democratic politics

and breaks up established social relationships in the realms of kinship and civil society. Significantly, these four characteristics of globalisation are evidenced in developing and industrially advanced economies alike.

What this says to me is that the presentation of globalisation as if it were a single phenomenon is a big part of the problem. There is not and is unlikely to be a single globalisation and the forces behind this phenomenon will almost certainly not lead inexorably to homogenisation. What we have and what we are likely to continue to see are many *globalisations*.

Does this not seem so logical when we pause to think about it? The phenomenon from which the globalisation metaphor derives is based on different and distinct happenings in countless separate places. Thus, we will continue to see multiple outcomes, different responses, new institutional arrangements, a complex variety of coping strategies, winners and losers, and new configurations of the included and the excluded.

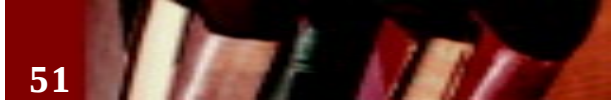
Paul Streeten has provided us with a helpful starting point to thinking more clearly about this.



Globalisation
(From Paul Streeten)

Good For	Bad For
Japan, Europe, North America	Many developing countries
East and South East Asia	Most of Africa
Output	Employment
People with assets	People without assets
Profits	Wages
People with high skills	People with few skills
The educated	The uneducated
Professional, managerial and technical people	Workers
Flexible adjusters	Rigid adjusters
Creditors	Debtors
Those independent of public services	Those dependent on public services
Large firms	Small firms
Men	Women, children
The strong	The weak
Risk takers	Human security
Global markets	Local communities
Sellers of technologically sophisticated products	Sellers of primary and standard manufactured

As mentioned, the above framework may serve as a starting point. Paul Streeten would be the first to caution that some of his classifications may be wrong. He would underscore that what is important is to increase our



understanding of the complex and subtle ways in which the global and the local interact, influence one another and establish both synergies and conflicts in a heterogeneous and fast-changing world. Again, this suggests strongly to me that we need to begin think in terms of globalisations and not of globalisation.

Now, what does all this imply for the institutions engaged in international cooperation? A great deal obviously, but I will limit myself to two major implications.

- First, many of the debates on what globalisation means for development are framed as if development were a matter of choosing between global versus local or macro versus micro approaches. This is a false debate and it should be abandoned by all development organisations. These are neither opposing realities nor opposing epistemologies and attempts to depict them as such fall into that same category of intellectual sterility as the modernity versus tradition dichotomy that characterised early post-war area studies. Serious development thinking and action will need to grapple simultaneously with the interconnection of the general and the specific, to link local experience to global forces, and to test the validity of the premises and assumptions underlying globalisation theory.

- Second, this cannot be accomplished under the highly segmented and differentiated arrangements that currently apply. Integrative knowledge systems are required and these will depend in large measure on information networking, the theme of this Congress. Significant investments and strategic arrangements are required to estab-

lish these. A lot of recent development talk has been about development organisations becoming knowledge organisations. This is good because that is exactly what must happen if these organisations are to have much relevance at all in the third millennium (also the theme of your Congress). The fact remains, however, that most development organisations remain part of the family of post WW II "delivery" organisations. Stated very bluntly, very few can claim to be knowledge organisations. More importantly, there is very little in the way of real and effective horizontal integration of information. Yet, it is abundantly clear that such arrangements have become imperative. Without these, international development organisations are unlikely to be significant forces in dealing with the real issues of development in the new millennium.

Globalisations, then, will define much of the context for international development efforts in the next millennium. The institutions involved in these efforts confront issues that are of a greater complexity and nuance than anything known previously. Included in globalisations are differing visions of the relationship between nature and humankind, the transformation of markets, new pandemics and the return of ancient scourges, spiritual/religious upheavals and rejections of "modernity", vast flows of international labour and refugees, the unprecedented production of wealth and at the same time increasing social exclusion and poverty.

In an earlier time of considerable turbulence, the Spanish philosopher, Jose Ortega y Gasset, remarked that: "We don't understand what is happening to us and that is what is happening to us." His assessment strikes

me as especially pertinent today. On the eve of the next millennium, humanity is both witness and victim of the most sweeping process of change since the industrial revolution.

In the new century, development and progress will not mean the same things that they have meant over the past fifty years. New concepts will emerge and with them the understanding of a vast new complexity of multiple realities. For the institutions of international development that were founded and took their shape and definition in a different era, the question is whether they will be swept aside into irrelevance or exercise leadership in producing the new understandings and the redefinition that will take place with or without them. There is, of course, no choice, although producing that leadership and the innovation that it will need will clearly not be easy. For to quote from Keynes: "The difficulty lies not in new ideas, but in escaping from old ones". Perhaps more apt is the challenge once issued by Albert Einstein: "We cannot solve the problems we have created with the same thinking that created them".

What Do the New Technologies Mean For Development?

Enough then on the state of development. Let me now turn more specifically to information technologies. There is, of course, a great deal of "hype" about these and many international development organisations have joined in that hype. For the most part development statements on this subject are along the lines that the new information technologies will place people everywhere, from downtown Manhattan to the remotest village in Central

Africa, on the same footing. The more romantic and poetic expressions use such words as: "The new technologies are placing all of humankind on the level playing field for the first time in history". Well, it is a nice thought, but as I have tried to make clear, the truth is that globalisation simply is not working that way. As South Africa's Vice-President Thabo Mbeke curtly observed on this subject: "One half of humanity has never used a telephone".

If we think about it for just a moment, this current hype about the new technologies is not at all surprising. In Western societies from the time of the Industrial Revolution new technology and its mastery have been taken as the main key to human progress. This is not to suggest that there have not been detractors. The Luddites from the textile craft guilds of early 19th century England smashed new machines that they believed — quite rightly as it turned out — would eliminate their jobs and take away their livelihoods. That attitude towards new technology has never completely disappeared. Over the years, many labour unions have fought against the introduction of new technology.

So there have been detractors, a few of them at least. But, by and large, these have been the exceptions. For the past 200 years, a foundation stone of liberal thought and of Western civilisation itself has been a profound belief in the inevitability of human progress through advances in technology coupled, of course, with appropriate education and learning systems.

The intellectual and political roots of the international development effort itself are found in this faith in technology. The popular wisdom following

the Second World War, and especially in the 1960's as country after country became independent states, was that progress for all was inevitable. Development was essentially a matter of applying technology, again with the right mix of education and training. It all seemed so logical. After all, were these not the factors that separated economically developed countries from most of their underdeveloped neighbours?

It is hardly surprising, therefore, that the new information technologies that are allowing globalisations to occur should be held up as the new panacea, as the key to the elimination of poverty, misery and want. The conventional wisdom tells us that the horizon is glowing with the new technological possibilities that will solve our problems.

And the new technology is advancing at a breathtaking pace. Allow me to pluck a paragraph from the 150th anniversary issue of *The Economist*:

> *"Early in the next decade, the central processing units of 16 Cray YMP computers, now costing collectively some $320 million, will be manufacturable for under $100 on a single microchip. Such a silicone sliver will contain approximately one billion transistors, compared with some 20 million in current leading-edge devices. Meanwhile, the 4kHz telephone lines to America's homes and offices will explode into some 25 million possible hertz of fibre optics."*

Now this is where I would like to end my speech, at the part where we know exactly what we need to do and where, thanks to new technology the Holy Grail is at last within our grasp and where everybody can live happily ever after. Unfortunately, what we would all like to end as a fairy

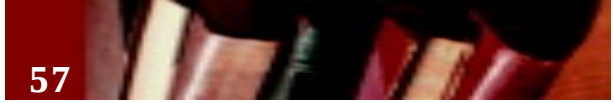
tale has developed a few major complications. The fact is that some of the calmest, most measured, most logical thinkers that I have been lucky enough to meet in the course of my work are looking at both the new technologies and at the spectre of the 21st century with alarm.

Why? Well an obvious first factor involves world population. Even the most optimistic of demographic projections indicate the world population will reach 10-11 billion at some point during the next century. The biggest obstacle to building a better world in my lifetime - and in the lifetime of most of the people in this room - has been and remains a function of the explosion in population over the past half century.

Consider the following: In 1997, according to ILO statistics, there were throughout the world about 90 million new job seekers. The demographic structure that we currently have tells us that in less than 20 years that figure in one year alone will be approximately 700 million. Almost all of these will be in so-called developing countries. Let me put this another way: more people will soon be trying to find work in developing countries in a 2-3 year period than the entire global population at the end of the last century.

This is complication enough, but matters are, in fact, much more complicated. This explosion in people entering the workforce is happening at a time when we are not at all certain what the new technologies will mean for employment, jobs, income and security.

Now this is a hotly debated subject and an exceedingly complex one. Technological change is not new and history tells us how disruptive and painful



such change can be. The fact is, however, that previous examples of technological change have always created new jobs to replace jobs lost to technology. The questions we need to ask are whether that is going to happen this time and what kinds of jobs or work are going to be created.

Robert White, President of the U.S. National Academy of Engineering, is naturally a great admirer of technology. He points out that - and I quote - "technological advance has been the most powerful job creation mechanism [that] society has devised. "But he now asks: "Will the rate of creation of new industries be adequate to provide the jobs that are lost as a result of productivity increases?" And he answers his own question with chilling observations of a few big winners from new labour-saving technologies and of expanding armies of losers from those same technologies. And White concludes by stating that: "... we are witnessing the collision of philosophies and beliefs about economic growth, social equity and technology."

And *Business Week* magazine, a major voice of North America's private sector, used its 65th anniversary issue in late 1994 to focus on the new technologies and their meaning for all of us. The report echoes the anxiety of Robert White and at one point wonders if we are not headed toward a world in which half the population is permanently overworked, and the other half permanently unemployed.

These are frightening thoughts and this is very serious stuff.

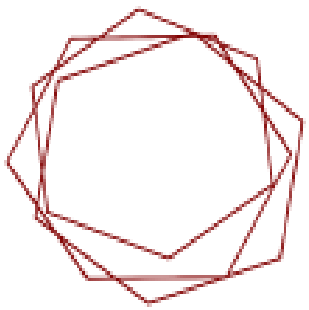
The new technologies are certainly creating jobs. The software industry, for instance, didn't used to exist and is now a major employer. It does not

appear, however, to be the major employer that the conventional wisdom would lead us to believe. Microsoft and Intel, for example, are the two giants of the computer industry, but in 1996 they reported a combined total of only 48,100 employees world-wide. This is small compared with Ford (323,300), General Motors (721,000) or Kodak (132,600). Indeed, all of the computer firms (hardware and software) listed on Wall Street have a combined world-wide grand total of 128,000 employees, less than half the number employed by Ford alone.

There are other data from the United States that might cause us to share the concerns of Robert White. As a general hypothesis, one would expect that the explosion in information technologies, especially in the United States, would create an especially high demand for engineers and that such demand would be reflected in higher average incomes. The data show the opposite: between 1968 and 1995 the median salary, including benefits, of engineers with ten years experience declined 13 percent in constant dollars.

As I mentioned, the relationship between technological change and employment is exceedingly complex. This is all the more so today in our world of shrinking national borders. We need much better information and to invest in learning a great deal more about this.

Whatever that additional and improved information may add to our understanding, however, one thing does seem quite apparent: our technical creativity is racing far ahead of our social creativity. We do not suffer from a shortage of talent when it comes to producing new technologies or in the organisation required to use and to innovate around technologies. In



my view, what we do suffer from is a dangerous shortage of talent in understanding what it all means, what it will mean for our children, how to spread the gains and minimise the losses, what it will mean to society, to community, to our capacity to govern ourselves, to culture and to the human spirit. These are the issues on which global leadership is required and on which the very strongest of leadership should be forthcoming from international development organisations. In his recent study *Has Globalisation Gone Too Far?*, Dani Rodrik concludes that it is precisely these issues that must be urgently addressed and that continued failure to do so will produce social disintegration.

I must be very clear here. I am in no way arguing that international development organisations should reject the new technologies. Quite the contrary - to do so would be a breathtaking act of suicidal stupidity. The technology does offer a way forward. There is no shortage of information. The era in which we live creates mountains of information on daily basis. One estimate goes so far as to suggest that we now produce and transmit more information in a single week than in the entire 19th century (although I do not know for the life of me how one would arrive at such an estimate). The application of technology is urgently required to sift and search these mountains and to distribute the information more equitably. Libraries can and should be at the forefront of such an effort. At my institute, the Institute of Development Studies, we have the largest and most comprehensive development library in Europe. We are working hard and quickly to make it a global information service, fully interactive and responsive in real time to schools, researchers and policy makers throughout the world and principally in developing countries. We need to do this in Latin America and I would like to suggest that IDS and the 600 libraries

and documentation centres of BIREME begin an immediate conversation on how we can join forces on this.

The point, then, is not whether development organisations should or should not embrace the new technologies. It is that the technologies can produce benefits only if they are accompanied by a wide and diversified range of social innovations. The forces that I have referred to in this talk - the forces of globalisations and technological change - are powerful and pervasive. They bring with them new promise and grave risk. The eve of the third millennium is a time for serious reflection and for the clearing of our heads before it is too late. It is a time which should call forth from us the same kind of innovative energies that we witnessed at the close of WW II when international development and its institutions were born. For much of humanity, a bridge to the next millennium will depend on whether those energies are found.

Whether international development organisations, including the one that I have the honour to head, survive and, indeed, deserve to survive should depend on our response to this challenge. We are doing a very poor job of it at the moment. I should like to close by returning to Jose Ortega y Gasset who was, I believe, one of the clearest thinkers and greatest visionaries of this rapidly fading 20th century. He wrote the following:

> *"The need to create sound synthesis and systematisations of knowledge .. will call out a kind of scientific genius which hitherto has existed only as an aberration: the genius of integration. Of necessity this means specialisation, as all creative effort inevitably does; but this time (the specialising will be) in the construction of the whole."*

The Virtual Health Library : The Future of the Latin American and Caribbean System on Health Sciences Information

Juan Antonio Casas

Director, Division of Health and Human Development,
Pan American Health Organization - PAHO/WHO

The Virtual Health Library: The Future of the Latin American and Caribbean System on Health Sciences Information

Closing Conference to
IV Pan American Congress on Health Sciences Information,
San José, Costa Rica, March 24th - 27th 1998

"Without ideals progress would be inconceivable.... Humankind does not reach as far as idealists would want, but it always goes beyond where it would have without their effort."

José Ingenieros *(The mediocre man)*

Information and Society

The concepts ***information, knowledge, and technology*** are fundamental elements for establishing the framework for the discussion on the potential possibilities of the Virtual Health Library .

According to Porat, ***information*** refers to data that have been organized and communicated.[2] On the other hand, by ***knowledge,*** we understand the set of organized assertions about facts or ideas, presented through a reasoned judgment or an experimental result, which is transmitted to others by means of a systematic form of communication. ***Technology*** is the use of scientific knowledge for doing things in a specific manner that can be reproduced.[3]

For example, the assertion 'the speed of light = c = 300,000 km/second' is a piece of information. Meanwhile, $E = mc^{2"}$, although it can be communicated as an organized datum, and therefore is in itself information, also represents a complex set of reasonings about the nature of the world which implies knowledge as a mental representation of the interrelation-

[1] Text based on a presentation to the IV Pan-American Congress on Health Science Information, San Jose, Costa Rica, March 1998
[2] M. Porat, The information economy: definitions and measurement, 1977
[3] D Bell, The coming of post-industrial society: a venture in social forecasting, 1973

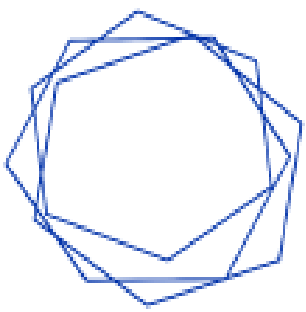
ship between mass, energy, and the speed of light. On the other hand, the design and explosion of a nuclear artifact over the city of Hiroshima, repeated after a few days in Nagasaki, and many more times to this day, is clearly a singular example of technology based on the knowledge contained in that simple and elegant Einsteinian formulation.

Another fundamental concept to understand the characteristics of scientific and technical health information in the new millennium is that of ***globalization***. By this process, the decisive activities in a given scope of action (economy, media, technology, environmental management, and organized crime) function as a unit in real time in the whole planet.[4] It is a historically new process, different from internationalization and from the existence of a world economy, because it is only in the last decade that a technological system has been constituted (telecommunications, interactive information systems, high-speed transportation for people and goods) that can make said globalization possible. The ***Informationalization of society***, *based on the technological revolution that has become the new operational paradigm in the 1970s, is the basis of the economic globalization*.

According to Castells, the ***development modes*** are the technological forms by which work is applied to matter in order to generate the product, thus, determining in the final analysis the level and quality of the economic surplus[5]. Each development mode is defined by the fundamental element in promoting the process productivity, that is, the technological produc-

[4] Castells, M. Hacia el Estado Red: Globalización económica e instituciones políticas en la era de la información, Sociedad y Reforma del Estado, Sao Paulo, 1998
[5] Castells, The rise of the network society,.p.16.

tivity factor. In the case of the ***agrarian mode*** of development, these factors are labor and natural resources, especially the land. In the ***industrial mode*** of development, production and decentralized distribution of energy make up these factors. In the emerging ***informational mode*** of development *the source of productivity lies in the technology for generating knowledge, data processing and communication of symbols.* Knowledge and information are critical elements in all the development modes, since every productive process requires some level of knowledge and information processing. However, the specificity of the informational mode consists in that the principal source of productivity is the action of knowledge on knowledge itself. In other words, information processing basically addresses the improvement of information processing technology as a productivity source, thus, generating a virtuous circle of interaction between knowledge as a source of technology, and the application of this technology to improve knowledge generation and information processing. Each development mode is based on a performance principle that links and organizes the technological processes; in the case of industrialism, this principle is economic growth, that is, maximization of output. In informationalism, this principle is technological development, that is, it is oriented toward the accumulation of knowledge and higher levels of complexity in information processing.



According to Freeman,

> *"The contemporary change of paradigm may be seen as a shift from a technology based primarily on cheap inputs of energy to one predominantly based on* ***cheap inputs of information derived from advances in microelectronics and telecommunications technology.***" [6]

This new informational technologic paradigm has in turn certain key characteristics that are crucial for understanding the potential of scientific and technical information networks in general, and particularly in health:

1. The raw material is the information itself since the technologies act on the information, not just the information on the technology.

2. Its effects permeate the totality of individual and collective existence. Since information is an integral part of every human activity, all aspects of individual and collective existence are affected by the new technological means.

3. Its logic and morphology is that of the network, since this is the structural configuration that best adapts to the growing complexity of the interactions and the unpredictable patterns that arise from these. On the other hand, the network configuration is feasible only through the development and application of the new informational technologies.

---

[6] Freeman, Christopher, Technical change and economic theory, London, Pinter, 1988, p.10.

4. It is flexible: the processes, organizations and even institutions are reversible and can be reconfigured, through the reorganization of its components. This capacity to be reconfigured is a decisive feature in a society characterized by constant change and organizational fluidity.

5. Finally, another characteristic of this technological revolution is the convergence of the specific technologies in highly integrated systems, in which the previous technological trajectories become indistinguishable: microelectronics, telecommunications, information science, and even biotechnology articulate themselves increasingly in unique and comprehensive processes of information processing.

Finally, as advised by Castells, the predominant mode of development at every given time shapes all social behavior, disseminating its forms among the set of relations and social structures, penetrating and modifying the exercise of power and of experience. In the case of the new informational mode, this interrelationship reaches even deeper:

> *"Because informationalism is based on the technology of knowledge and information, there is a specially close link between culture and productive forces, between spirit and matter in the informational mode of development. It follows that we should expect the emergence of historically new forms of social interaction, social control and social change.....**For the first time in history, the human mind is a direct productive force, not just a decisive element of the production system."*** [7]

[7] Castells, The Rise of..., P. 18

Scientific and Technical Information in Health (STIH) and the role of the Pan American Health Organization

The vocation to be an instrument for the dissemination of scientific and technical health information has been a mandate from the Pan American Health Organization from its inception. In the Pan American Sanitary Code, signed by the governments of the Hemisphere in 1924 it was stated that:

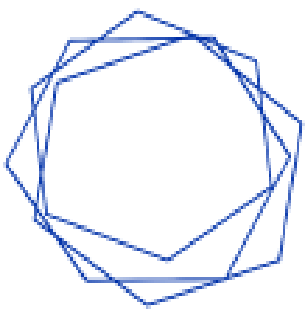
> *(The Pan American Sanitary Bureau it will be) "...the general center of collection and distribution of sanitary reports for the countries of Americas.... and should ....provide the health authorities of the Signatory Governments, by means of its publications or otherwise adequate means, all the available reports related to the true state of communicable diseases in man, the progress achieved in the control or extermination of the same, the new methods utilized in order to combat disease, morbidity and mortality statistics, the organization and management of public health, the progress carried out in any of the branches of preventive medicine and other reports related to sanitation and public health."*

At present, the Organization manages two types of health information in carrying out its task of technical cooperation in health with the member countries: the information on *health conditions* and the *scientific and technical information in health* (STIH) of importance for the countries. In compliance with its mission, the first Bulletin of the Pan American Sani-

tary Bureau, the oldest continuously published public health journal in the Americas, was issued in 1926. In addition the Organization periodically produces numerous publications and reports on the health conditions of the countries of the Americas.

This task of "collecting and disseminating" sanitary publications of the Region was strengthened since 1967 when, through agreement between the Government of Brazil and PAHO, the Regional Library of Medicine (BIREME) was created. In 1982, it became the Latin American and Caribbean Center on Health Sciences Information. The mission of BIREME consists in being the Specialized Center of the Pan American Health Organization responsible for:

- The dissemination of *STIH* among the health workers of the Region
- The processing of public health and medical literature produced in the countries of the Region
- The articulation of the regional system with other large systems of STIH
- The coordination of the national networks and regional network of STIH that constitute the **Latin American and Caribbean System on Health Sciences Information.**



Toward the Virtual Health Library (VHL)

In BIREME's first period action focused on the operation of the regional medical library with a view to responding primarily to the needs for access to the scientific literature of the medical libraries of the Region. Starting in 1977, the action of BIREME was oriented toward the creation and development of the network of libraries in the Region in search of the rationalization of resources and the shared use of its collections, and the bibliographic indexing of Latin American journals under the publication of the Latin American Index Medicus. In the last ten years BIREME has led the creation and development of the Latin American and Caribbean System on Health Sciences Information, the creation and dissemination of the LILACS methodology for the decentralized treatment of scientific literature, the creation of the Descriptors in Health Sciences (DeCS) in three languages, the launching of LILACS in CD-ROM and the promotion of the formation and development of scientific and technical information systems specialized in several priority public health areas in the Region. In the decade of the 1990s BIREME connected with the Internet and organized four Regional Congresses in Information in Health Sciences with the massive participation of professionals of health information of all the Hemisphere and of Europe, which has contributed to an extraordinary exchange of information and experiences.

At present, the countries of the Region, immersed in the process of paradigmatic change described in the previous section, require a new type of

technical cooperation that could lead to the creation and operation of decentralized sources of information through the Internet, broader in their scope and with multimedia support, with added value to serve needs of specific groups of users, with less mediation and through interfaces that facilitate the direct interaction of the users with the sources of information.

In this new paradigm, the strategy of dissemination of STIH in the Region should be based on the following principles:

- To be constructed on already existing structures
- Aimed at filling the needs of all the health workers, not only of academicians or `investigators`
- Constructed on cooperative networks
- Decentralized with universal scope
- Compatible with the systems already existing in the Region
- Accessible by all the possible and necessary means, according to the context of every user and every country
- With useful information for the user.[8]....

The recent external evaluation of BIREME carried out in 1997 recommended ratifying the key role of BIREME and of the Latin American and Caribbean System for the dissemination of STIH in the Region and strengthening the

[8] The definition **of Health Information Usefulness** is given by the following formula:
U = R x V / D, *where*
U *= Usefulness of the Information*
R = Relevance (as measured by the frecuency in which the user confronts the problem or topic)
V = Validity (the probability of accuracy of the information)
D *= Difficulty measured in time and effort required to find the information*

regional network through the increased participation of the national systems in its development. In addition it was proposed to reorient the task of BIREME toward technical cooperation with the national networks and the regional network, proposing as the regional goal the construction of the ***Virtual Health Library (VHL)*.**

The essential concept of the VHL is based on the new informational technological paradigm, with the decentralized production and management of textual and multimedia health science information sources, connected in networks with direct and universal access, without geographical nor time limitations, as a distributed base of scientific and technical health information which is registered, organized, and stored in electronic format in the countries of the Region, being universally accessible and compatible with other international information bases.

The Latin American and Caribbean System on Health Sciences Information and BIREME face daunting immediate tasks in order to convert this futuristic proposal into a reality. Among them it is to strengthen the technical cooperation function in support of the development of the Network and of the VHL, to coordinate the cooperative production of information databases and services, the research and development of information technologies, and the mobilization of human, institutional, and financial resources for the development and support of the proposal. In this regard, at the recent *Summit II of the Americas*, held in Santiago, Chile, the leaders of the countries of the Region established the greatest priority in health for initiatives such as the VHL upon declaring:

"The Governments will strengthen and improve the national and regional networks of health information....will develop, implement and evaluate, according to needs, health information systems and technologies including telecommunications, support for epidemiological surveillance, the operation and administration of health programs and services, health education and health promotion, telemedicine, computer networks and investment in new health technologies."

Conclusion

According to Kranzberg, the relation between technology, and society is expressed by **Kranzberg's First Law :**

"Technology is neither good nor bad, nor neutral."[9]

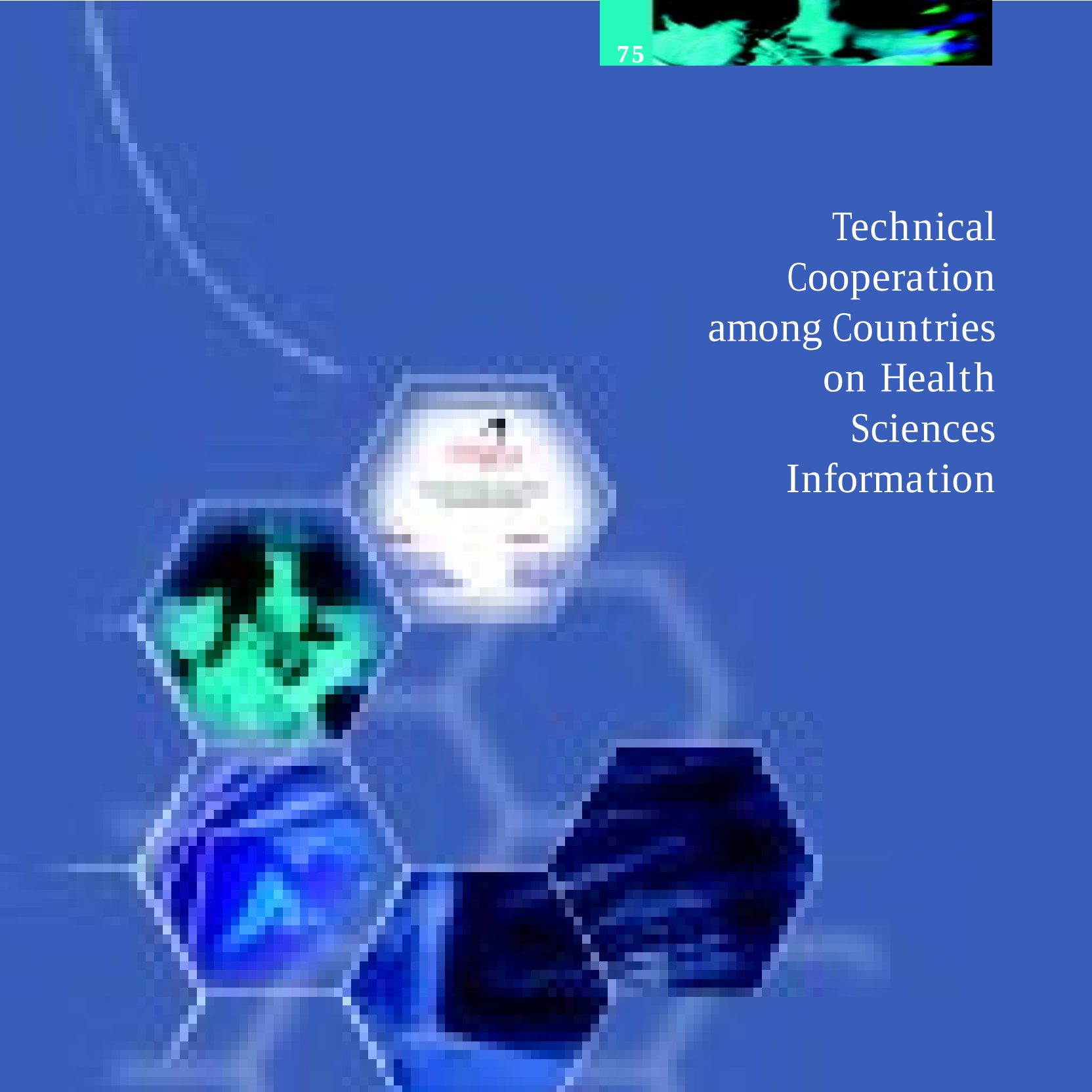
This aphorism is an expression of the ambiguous strength with which the new technological paradigm of development will insert itself in the total range of our social practice. Nevertheless, however unremitting, it is also a process that can be conducted and managed by conscious social will, and as such, it corresponds to each of us to exercise, as individuals as well as collectively, our participation in the development of the new model.

For those of us who work in the field of health and the human development in Latin America and the Caribbean, the construction of the Virtual

[9] Kranzberg, The Information age: evolution or revolution?, in Bruce R. Guile (ed), Information Technologies and Social Transformation, Washington D.C., National Academy of Engineering, 1985.

Health Library constitutes a conscious and necessary social action so that the health workers and the people of the Region can benefit from the new opportunities that this new informacional world can offer us. The step into a new millennium and a new model of social interaction is a challenge from which we cannot retreat. Upon assuming the commitment to make the Virtual Health Library a reality, the Pan American Health Organization and its member countries have displayed a visionary vocation similar to that which inspired the inception of the Organization nearly a century ago. By facing the challenge of adapting the new informational technologies to serve the needs and demands of the people of the Americas, the countries of the Region have commenced a new century of sanitary Pan Americanism, and have renewed their commitment for human development based on the value of the health as an irreplaceable element of a more equitable and just America, with Health for All and With All.

Technical Cooperation among Countries on Health Sciences Information



Alberto Pellegrini Filho

Coordinator, Research Coordination Program,
Division of Health and Human Development,
Pan American Health Organization, PAHO/WHO

Technical Cooperation among Countries on Health Sciences Information

Closing Conference to
VI Meeting of Latin American and Caribbean System on Health Sciences Information,
IV Pan American Congress on Health Sciences Information,
San José, Costa Rica, March 24th - 27th 1998

Cooperation. What for?

Speaking on the objectives, contents, mechanisms, and actors of the technical cooperation among countries on health science information is not a simple task, particularly at this important time of changes in the health sector with large impact for the area of health information.

The functions of health situation analysis and its trends, epidemiological and sanitary surveillance, regulation of the organization of care, etc., are collecting new emphasis as a consequence of the reform processes in progress both at the level of the State and of the sector. These are functions that generate strong demands of information for their fulfillment.

Similarly, the multiplicity of new public and private actors, including the population in general, involved in the activities of financing, administration, provision, and consumption of health services, also generate increasingly diversified demands for information. Undoubtedly, the production, collection, selection, analysis and dissemination of this information should occupy increasingly the cooperation agendas of agencies such as PAHO, and of technical cooperation among countries.

This is in some way one of the central subjects of the discussions this week. For that reason and due to my own limitations, I will not treat it as a whole, but concentrate on a particular aspect of this problem. I am referring to an aspect that, in my judgment, is one of the main if not the main problem that scientific health information faces: it concerns the divorce between the production of knowledge, on the one hand, and the utilization of this knowledge, on the other. It is the challenge of establish-

ing ties between the two, or, in a more general plan, the challenge of tightening the ties between science and society. With your permission, I will outline some ideas on this problem and the possibilities of overcoming it, pointing out the role of cooperation among countries and of domination and utilization of the new health information technologies.

The gap between knowledge and action is not a trivial problem. It has profound historical, conceptual, and institutional roots. With regard to the first, our scientific policy has been and continues to be influenced by the concepts developed in 1945 by Vannevar Bush, President Roosevelt's counselor for science, in his report "Science, the endless frontier" which inspired the creation of the U.S. National Science Foundation. The strict separation between basic and applied research adopted by the report—and subsequently endorsed by the conferences in Frascatti, Italy—has generated an apparent or false conflict between investigating in order to understand (basic research), versus investigating to solve problems (applied research). Or, in other words, between the science that contributes to the expansion of the knowledge frontier versus the science that tries to solve the problems of society. This false alternative has created a competition between both types of research for the acquisition of resources. It has served, among other things, to justify the isolation of much of the scientific community from the rest of society, as it would not have to concern in relating its task with the social demands.

In addition to this distortion in the conceptual bases of the S&T policies, from the institutional standpoint it has never been possible to create, in the countries of Latin America and the Caribbean, true S&T systems. Despite the important strides made to develop a scientific infrastructure,

particularly since the 1970s, no organizational-institutional arrangements have been established to permit the free flow of knowledge and technologies among the entities that produce them and the ones that use them. Efforts were concentrated almost exclusively in the offer, that is, support to groups and research projects, as if produced knowledge would be transferred automatically to those who could use it. In addition to that, efforts to develop a scientific and technical infrastructure were made in models of low competitive development, that slightly stimulated innovation and hindered the establishment of strategic alliances between countries for technical cooperation and the solution of common problems.

Favorable conditions

Currently, we observe a series of trends that, although in many cases are incipient, open new prospects for overcoming the aforementioned problems. The challenge is in how to strengthen them and take advantage of the possibilities they offer both for planning scientific activities most closely linked to the social needs, and for a better and broader access to the results.

In the first place, Bush's paradigm for the definition of scientific policies, based on the separation more or less rigid between knowing and using, and between what is basic and what is applied, is being replaced with a concept much closer to the concrete practice of research. That is the concept of strategic research, that is research seeking at the same time to expand the borders of knowledge and to solve concrete problems. Examples of this type of research abound in the history of science, from the

works of Pasteur, to more recently, the progress in immunology, molecular, or genetic biology to solve problems such as cancer, AIDS and others. The challenge for the planners and decision makers in science is such as abandoning the old schemes of resources allocation according to basic or applied research to concentrate them on those areas that make it possible to combine the intrinsic development of scientific enterprises with the social demands.

Another positive trend, now in an organizational-institutional plan, is the emergence of other actors in the planning, financing and execution of S&T activities—until not long ago practically an exclusive responsibility of the State, which had the researchers as its sole interlocutor. The trend towards diversifying the institutions that finance and execute the research activities, together with the claims for more social control over science to curtail the excessive control autonomy it holds, may help break the isolation of the S&T sector and bring it closer to the rest of society. In addition, internationally, S&T activities have been playing an increasingly central role in the cooperation agreements. It is fit to foresee that, with the development of these agreements in our Region, this will also occur in the health sector, particularly, where internationalization and complexity of the problems makes it impossible for any country, no matter how developed, to solve them individually.

Finally, another positive trend for closeness between production of knowledge and the social needs, at national and international levels, is the development of health information technologies, particularly, the organizational technologies to form collaborative networks as well as those related to the development of information science and communication. The

Latin American and Caribbean Health Sciences Information System and the Virtual Health Library are examples of these technologies adapted to our reality that, added to previous trends, open enormous possibilities to overcome the problems being discussed.

How to take advantage of these favorable conditions

As previously mentioned, these positive trends in many cases are just being outlined and it is necessary to widen the spaces being opened.

A first dimension of work in this regard is of a political-institutional nature, and it refers to the establishment of mechanisms of participation and communication to strengthen the ties between scientific activity and society in general. For this purpose, we must take advantage of the greater diversity of S&T actors and of the movement for a greater social control of science. This will create opportunities for discussion and consensus that will allow the S&T policies to be consolidated as public policies and submitted to public debate. The State should fulfill an essential role in this regard, establishing the spaces, incentives, channels, that is, the “rules of the game” for a broad participation in the definition of the direction to follow.

Another aspect is the creation of structures and mechanisms to strengthening the ties between research and other social sectors. There is a need for studies to learn in more systematic ways which are the barriers and the

facilitating factors in the relationship among producers of goods and services and the research institutions, as well as between these and the decision makers on social and health policies. However, we already have some information and experiences that may assist us in the creation of these structures. These are the structures and mechanisms that may facilitate the transfer of technology to the productive sectors; that may translate the results of research for a broader dissemination; and that may promote the creation of incentive systems to make the researchers be concerned with the utilization of their findings, etc.

These lines of work placed in a dimension of political-institutional development should be founded by a technical basis, and it is in this space that I intend to share with you some ideas. Access to the information is an indispensable requirement so that the various actors involved or potentially involved in activities of S&T in health (S&T planners and administrators, researchers in different disciplines, entrepreneurs, decision makers, health professionals and the general public) may actually participate in the decisions concerning S&T, and take advantage of its benefits. In order to reach each one of these actors it is necessary to know the sources of information that they rely in, what type of information they are interested in, how they evaluate the information, which are their motivations, etc. The Virtual Health Library (VHL) creates a platform of broad and unrestricted access where any type of information may be included and where the users have total autonomy to command the search as per their needs and interests. This creates great opportunities, but also represents a great challenge in the sense of enhancing the type and quality of the information.

Having as a reference the objective of promoting and strengthening strategic research, that is, that which allows to combine the needs for intrinsic science development with the attention to social demands. Or as Stokes well says, "to combine the research seeds with societal needs", we need basically two large types of information: first, the ones regarding health situation with the knowledge demands it generates, and second, the ones referring to scientific output, its trends, and capacity of response to these demands.

Regarding the demand, or social-needs, in spite of the Region's long experience in collecting mortality data, we are still very far from having data to enable us to account for the complexity of the health situation and health care in the Region. We have very little reliable information on morbidity, as well as on structure, financing, care quality and outcomes of the health systems. Even in the case of mortality data, its aggregation level does not allow a more precise analysis of situation and trends for the identification of inequities or specific groups problems by occupation, social class, gender or ethnic group.

However, there are some examples of new developments that should allow a more precise description of the health situation, such as, the proliferation and enhancement of health situation surveys and living conditions; the dissemination of the use of geographic information systems; the design and enhancement of indicators that enables to evaluate years-of-life-lost by death and by disability, etc. These developments, associated to those being observed in the methodologies of definition of research priorities, will permit a clearer identification of the problems, and of the knowledge demands.

With regard to the data, indicators, and studies to evaluate the response capacity of the scientific infrastructure to these demands, or the“seeds”of science, we are in a more precarious situation. Possibly this occurs because for a long time no one has been concerned about having information on the relevance, the quality, and the impact of the scientific output. The first to be interested in measuring and evaluating the scientific output were the Science sociologists and historians early in the 1960s, and only by the middle of the following decade, the planners became interested. Until then, the S&T planning processes were based almost exclusively on the opinion of experts.

I should not extend in relating the difficulties and deficiencies of the databases on scientific and technical potential and on the scientific output of the Latin American and Caribbean countries. You know more than I do on this subject. We all know of the high costs, fast obsolescence, and low coverage of the surveys that are made to researchers, research institutions, and financing agencies in order to obtain data on human, financial, and materials resources, projects in progress, publications, etc. With regard to databases on formal scientific publications, the advances achieved with LILACS are extraordinary, but the studies on production and scientific productivity in our Region are almost all made from international databases, particularly that of the Institute for Scientific Information (ISI). We know that this base is not appropriate to analyze science in the developing countries and much less to make decisions on scientific policy. Since it is limited to articles published by authors from these countries in the most important journals in the developed world; therefore, it does not allow an inventory of the scientific output of the countries considered.

The indicators used to analyze the scientific and technical activity in our countries continue to be limited to indicators of inputs and of products. We do not have adequate impact indicators and those of products usually are still limited to the scientific article published in a mainstream journal. We do not have analysis parameters, that is, optimal criteria for production and productivity, and because of that our studies on scientific production are restricted to comparisons between countries without taking into account the different cultures in terms of publications. When areas and types of research are compared, the different publication patterns among them are not taken into account either.

As you can see, the data, indicators, and types of studies conducted on the scientific activity in our countries contribute very little to evaluate the true potential for response to the identified problems. For that, we need, among other things, new methodological developments that, combining qualitative and quantitative approaches, permit a better comprehension of the nature and characteristics of science in the developing countries. We need also to improve the local databases and create new indicators to answer well-defined questions and to recognize the specificities of science in our countries.

In conclusion, the task of improving the data, indicators, and methodologies of analysis, both of health situation and scientific activity, in order to allow greater relevance and quality to health research and a better use of its fruits, is quite complex. However, as seen, there are a series of elements in the context that create favorable conditions to face this task, which necessarily implies an effort of interdisciplinary work. Hardly can an institution or a country face it individually, this creates broad spaces for tech-

nical cooperation development in this field. Another favorable element is the consolidation of the Latin American and Caribbean System on Health Sciences Information, which represents an important institutional infrastructure for facilitating this cooperation, particularly, with respect to management of the health information methodologies and technologies, where today the proposal of the Virtual Health Library is highlighted. We are aware that several actions in this regard are in progress, and despite all its limitations, the Research Coordination of the Division of Health and Human Development of PAHO/WHO is willing to associate itself with this effort. The challenge is big but there are many reasons to be optimistic.

Thank you very much.

87

Declaration of San José Towards the Virtual Health Library

VI Meeting of Latin American and Caribbean System on Health Sciences Information, IV Pan American Congress on Health Sciences Information, San José, Costa Rica, March 24th - 27th 1998

We, the delegates of the Latin American and Caribbean System on Health Sciences Information, at the Meeting held in San José, Costa Rica from the 23 - 27 March, 1998, IV Pan American Congress on Health Sciences Information.

Taking into account

That health and well-being are the foundation and reason for all efforts channeled towards development;

That health conditions are intimately related to the equity of living conditions and access to the fruits of development;

That access to information constitutes one of the essential elements to achieve these goals;

That the changes in information and communications technology in the name of globalization offers risks as well as opportunities for the goals of human development in the region;

That it is the responsibility of nations to act consciously to reduce the negative effects and maximize the benefits that technological development brings;

That the Latin American and Caribbean System on Health Sciences Information, under the leadership of BIREME/PAHO/WHO has been consolidating and effectively managing the new technologies and is capable of applying them to the realities of the region.

Pledge

To construct the Virtual Health Library in a cooperative manner, as a unified response to our health situation, facilitating wide access to information for the permanent improvement of health of the people. At the same time it will be a tool to strengthen our health systems and sustain human development in the Region.

Urge

The Pan American Health Organization to continue to support and strengthen the Latin American and Caribbean System on Health Sciences Information, and coordinate the formulation of policies and plans for the construction of the Virtual Health Library;

The technical and financial cooperation agencies and other entities, both regional and international offer major support to the initiatives and actions that generate the fulfillment of these goals;

The Governments of the Region to support the strengthening of National Health Information Systems, facilitate the coordination of relevant national plans, assign and mobilize the necessary resources for the development of the Virtual Health Library and include it as an essential component of any initiative that seeks to promote the use of technology in the name of health and well-being of the people of the Region.

National Coordinating Centers Delegates of the Latin American and Caribbean System on Health Sciences Information

Anguilla Public Library
Russel Reid, Resp.
The Valley - ANGUILLA
Fax: (809) 497-2441 / 497-2908
E-mail: reid@offshore.com.ai
N-mail: AI1

Health Information Division
Ministry of Health & Home Affairs
Sheila Rosemarie Pigott, Resp.
Aflak Building - Friar's Hill Road
St John's - ANTIGUA
Fax: (268) 462-9333
N-mail: AG3.1

Centro de Documentación
Representación OPS/OMS
Susana Catalina Iannello, Resp.
Marcelo Torcuato de Alvear 684
1058 Buenos Aires - ARGENTINA
Fax: (541) 311-9151/312-2646
E-mail: caty@ops.org.ar
N-mail: AR5.1

Health Information Coordinating Services
Bahamas Ministry of Health
Terrance Fountain, Resp.
P.O. Box N-3729
Nassau - BAHAMAS
Fax: (242) 322-1211 / 328-1211
E-mail:
fountnt@grouper.latelnet.bs
N-mail: BS2.1

Main Library
University of the West Indies
Michael E Gill, Resp.
P.O. Box 1334
Bridgetown - BARBADOS
Fax: (1246) 425-1327
E-mail: gillme@caribsurf.com
N-mail: BB11.1

MOH/PAHO National Health Library
Ilona Arzu, Resp.
P.O BOX 1334
Belize City - BELIZE
Fax: (5012) 30917
E-mail: ilona@paho.org.bz
N-mail: BZ1.1

Red Boliviana de Información en Ciencias de la Salud
Facultad de Medicina
Universidad Mayor de San Andres
Hugo Bernardo Morales Bellido, Resp.
Avenida Saavedra 2244 - Miraflores
Casilla 12148
La Paz - BOLIVIA
Fax: (5912) 311814
E-mail: hmorales@redmed.bo
N-mail: BO6.1

*BIREME - Latin American and Caribbean Center on Health Sciences Information - PAHO/WHO
João Yunes, Accting Director
Rua Botucatu, 862
04023-901 Sao Paulo - BRASIL
Fax: (11) 571-1919/ 575-8868
N-mail: BR1.1

Public Library
Joy Suzanne Greenaway, Resp.
Road Town
Tortola - BRITISH VIRGIN ISLANDS
Fax: (809) 494-3495
N-mail: VG5.1

Biblioteca Central
Facultad de Medicina
Universidad de Chile
Sylvia Anabalón Casas, Resp.
Avenida Independencia 1027
Casilla 70001-7, Correo 7
Santiago - CHILE
Fax: (562) 777-2785
E-mail:
sanabalo@canela.med.uchile.cl
N-mail: CL1.1

Centro de Documentación
Federación Panamericana de Asociaciones de Facultades (Escuelas) de Medicina - FEPAFEM
Juan Gabriel Cendales, Resp.
Calle 123 # 8-20
Santa F, de Bogotá - COLOMBIA
Fax: (00 57 1) 213-6809
E-mail: fepafem@fepafem-bogota.org
N-mail: CO47.1

Caja Costarricense de Seguro Social
Biblioteca Nacional de Salud Y Seguridad Social - BINASSS
Virginia Siles Rojas, Resp.
Apartado de Correos 10105
San Jose - COSTA RICA
Fax: (506) 233-8359
E-mail: vsiles@cariari.ucr.ac.cr
N-mail: CR1.1

Centro Nacional de Información de Ciencias Médicas
Jeremias Hernandez Ojito, Resp.
Calle E n. 454 c/19 y 21, Plaza
C.P 10400
La Habana - CUBA
Fax: (537) 33-3063
E-mail: ojito@infomed.sld.cu
N-mail: CU1

National Documentation Centre
Government Headquarters
Anne J Lewis, Resp.
Kennedy Avenue
Roseau Commonwealth -

* National Coordinating Center for Brazil and Regional Coordinating Center

DOMINICA
Fax: (809) 448-7928 / 448-5200
N-mail: DM5.1

Banco de Información Cientifico-Médica
Facultad de Ciencias Médicas
Universidad Central del Ecuador
Victoria Gavilanes de Garcia, Resp.
Iquique Y Sodiro S/N Casilla 6120
Quito - ECUADOR
Fax: (5932) 52-6530
E-mail:
red@bicme.ecuanex.net.ec
N-mail: EC1.1

Biblioteca Dr. Luis Edmundo Vasquez
Facultad de Medicina
Universidad de El Salvador
Salvador Octavio Montes, Resp.
Ciudad Universitaria Final 25 Avenida Norte
San Salvador - EL SALVADOR
Fax: (503) 225-8318/298-2817/225-4208
E-mail: salvam@med.ues.edu.sv
N-mail: SV3.1

Centro de Información
Dirección General de Servicios de Salud
Ministerio de Salud Pública y Asistencia Social
Flor de María Guerra Ruano, Resp.
9ª Avenida 14-65 - Zona 11
01801 Guatemala - GUATEMALA
Fax: (502) 51-8277/53-2053/29-303
N-mail: GT1.1

University of Guyana Library
Gwyneth George, Resp.
Turkeyan Campus - Box 10-1110
Georgetown - GUYANA
Fax: (5922) 22-5122 / 22-2486 / 225596
N-mail: GY11.1

Biblioteca Médica Nacional
Universidad Nacional Autónoma de Honduras
Orfylia Pinel, Resp.
Ciudad Universitarias
Tegucigalpa DC - HONDURAS
Fax: (504) 232-22-04
E-mail: sbunah@paho-who.hn
N-mail: HN1.1

Medical Library
The University of the West Indies
Laxmi Mansingh, Resp.
P.O. Box 107 Mona
Kingston 7 - JAMAICA
Fax: (1 876) 927-1073
E-mail:
lmansing@uwimona.edu.jm
N-mail: JM3.1

Centro Nacional de Información y Documentación sobre Salud - CENIDS
Gladys Faba Beaumont, Resp.
Av. Insurgentes Sur 1397 2. piso - COL. Insurgentes Mixecoac
Delg. Benito Juarez
03920 México, DF - MEXICO
Fax: (525) 598-9959
E-mail:
gladys@cenids.ssa.gob.mx
N-mail: MX1.1

Biblioteca Nacional de Salud
Vice Ministerio Médico
Ministerio de Salud
Veronica L Castillo Vargas, Resp.
Comp. Nac. Salud Conc. Pal. / Ap. P. 107
Man gua - NICARAGUA
Fax: (505) 289-4101
E-mail: castillo@ops.org.ni
N-mail: NI1.1

Centro de Información y Documentación Científica y Tecnológica
Vicerrectoria de Investigación y Postgrado
Universidad de Panamá
Lilia Rodríguez De León, Resp.
Ciudad Universitaria Octavio Mendes Pereira
Panam - PANAMA
Fax: (507) 264-4450
E-mail: cidcyt1@ancon.up.ac.pa
N-mail: PA2

Centro de Documentación
Representación OPS/OMS
Epifania Gomez Torales, Resp.
Mcal. Lopez 957 e/ EE.UU
Casilla correo 839
Asunci¢n - PARAGUAY
Fax: (59521) 450-498
E-mail: epigome@ops.org.py
N-mail: PY5.1

Oficina de Información Científica y Tecnológica
Universidad Peruana Cayetano Heredia
Naldo Balarezo G., Resp.
Avenida Honorio Delgado 430
Lima - PERU
Fax: (511) 482-4541
E-mail: oicyt@upch.edu.pe
N-mail: PE1.1

Recinto de Ciencias Médicas
Universidad de Puerto Rico
Francisca Corrada del Río, Resp.
P.O. Box 5067
San Juan 00936-5067 - PUERTO RICO
Fax: (787) 759-1357

E-mail: f_corrada@remaca.upr.clu.edu
N-mail: PR7.1

Centro de Documentación en Salud "Dr. Rogelio Lamarche Soto"
Facultad de Ciencias de la Salud
Universidad Autónoma de Santo Domingo
Manuel de Jesus Roa Santana, Resp.
Ciudad Universitaria
Apartado Postal 559-2
Santo Domingo - REPUBLICA DOMINICANA
Fax: (809) 565-2104
N-mail: DO25.4

National Documentation Centre
Ministry of Planning, Development y Environment
Vanesta Moses-Felix, Resp.
P.O. Box 709
Castries - SAINT LUCIA
Fax: (1 809) 452-2506
E-mail: felix@candw.lc
N-mail: LC5.1

National Documentation Centre
Pearl Herbert, Resp.
Kingstown - SAN VINCENT
Fax: (809) 457-2943
N-mail: VC2

University of Suriname Library
Tsai-Meu-Chong Ine, Resp.
P.O. Box 9212
Paramaribo - SURINAME
Fax: (597) 46-2291
E-mail: adekbib@sr.net
N-mail: SR3.1

Medical Sciences Library
The University of the West Indies
Eric Willians Medical Sciences Complex
Carol Yates, Resp.
Champs Fleurs - St. Augustine - TRINIDAD & TOBAGO
Fax: (868) 662-1392
E-mail: medlib2@trinidad.net
N-mail: TT5

Biblioteca Nacional de Medicina - BINAME
Centro Nacional de Documentación e Información en Medicina y Ciencias de la Salud - CENDIM
Stella Maris Launy, Resp.
Avenida Gral Flores 2125
11800 Montevideo - URUGUAY
Fax: (5982) 707-1264
E-mail: launy@hc.edu.uy
N-mail: UY1.1

Biblioteca "Humberto Garcia Arocha"
Fundación Sistema Nacional de Documentación y Información Biomédica - FUNDASINADIB
Instituto de Medicina Experimental - Facultad de Medicina
Universidad Central de Venezuela
Alecia Freitas de Acosta, Resp.
4º piso - Ciudad Universitária
Apartado Correos 50587 - Sabana Grande
Caracas 1050 - VENEZUELA
Fax: (582) 605-3511
E-mail: sinadib_at_ops/ven@cclink.paho.org
N-mail: VE1.1

BIREME and the Latin American and Caribbean System on Health Sciences Information: Towards the Virtual

Central theme
VI Meeting of Latin American and Caribbean System on Health Sciences Information
San José, Costa Rica,

Executive Summary

Over the past 30 years, the Latin American and Caribbean System on Health Sciences Information (Regional System) and BIREME have successfully developed the capacity of countries in the Region to create and operate national scientific and technical information systems in tandem with the emergence of new organizational, and information management paradigms. In recent years, the demand for technical cooperation with respect to Internet-based products and services has required new changes in BIREME and the Regional System.

The obsolescence of the current model coincided with the establishment of the BIREME External Evaluation Commission by the Director of PAHO in July and August 1997, which in its report stated that BIREME had shifted away from its mission as the Coordinating Center of the Regional System. Nevertheless, it recognized the fundamental role that BIREME has played and recommended that its leadership in promoting technical cooperation be strengthened.

The proposal to create and implement the Virtual Health Library (VHL) under the leadership of BIREME, represents the adoption of a new organizational and information management paradigm that will consistently respond to the recommendations of the External Evaluation Commission and to the new demand for technical cooperation.

The VHL represents an expansion of the current technical cooperation model, since it promotes decentralized production and operation of multimedia information sources, connected through networks with direct and universal access, exempt of geographical or scheduling restrictions.

BIREME has established a plan of action to implement the VHL based on 5 lines of action: promotion and marketing; realignment of traditional products and services; production of electronic publications; development of tools for integrating and locating information; and development of other VHL components. The plan of action will be implemented within a three-year period between April 1998 and March 2001.

BIREME and the Regional System: 30 Years of Evolution

The Latin American and Caribbean Region (LAC) is notable for the high degree of development it has achieved in the area of scientific and technical health information.

This development can be measured, along the past 30 years, by the constant and steady increase in the flow of information at the national and regional levels. This, in turn, is the result of the enhancement of the countries' ability to create and operate library systems and documentation centers with increasingly advanced information products and services.

The decentralized and cooperative production of the LILACS database system, which references the scientific literature on health generated in the

Latin American and Caribbean countries, constitutes the best example of the remarkable progress made by the Region in information management. The LILACS/CD-ROM compact disk, which integrates and publishes the results of this cooperative effort, has been updated and published regularly three times a year since it was launched nine years ago, which is a significant achievement.

Also worthy of attention are the countless national and international electronic health information products that the countries of the Region have been developing, acquiring, operating, and disseminating in recent years, thus, significantly expanding the availability of information for the community of health professionals. The vast majority of libraries and information centers are already fully connected to the Internet or will be in the next two years.

This ongoing development is, undoubtedly, the result of a coordinated policy between PAHO and the countries of the Region. Jointly and cooperatively, they have mobilized significant investments and efficiently applied them toward training of human resources and updating of collections of information sources and infrastructure of information technology in an environment characterized by limited resources and economic crisis.

PAHO has played a key role in this development, chiefly through the ongoing action of BIREME, which has become PAHO's operational arm for technical cooperation in scientific and technical information.

BIREME's activity in the Region, in general, may be divided into three stages, each lasting approximately 10 years. Each stage has been characterized by a principal orientation in the promotion of technical cooperation, in keeping with the current organizational and management information paradigms.

Thus, in the first stage, between 1967 and 1976, BIREME's activity was centered on the operation of regional medical library services with a view to responding, on a priority basis, to the needs of the medical libraries of the Region for access to scientific literature.

In the second stage, between 1977 and 1986, BIREME's activity was directed toward the creation and implementation of a network of libraries in the Region, in pursuit of efficient organization and the shared use of their collections. At the same time, bibliographic control of the Latin American journals found in the publication Index Medicus Latinoamericano was implemented through centralized processing. The expansion and enrichment of BIREME's role beyond that of a library was reflected in the change, in 1982, of its original name, from Regional Library of Medicine to Latin American and Caribbean Center on Health Sciences Information.

In the third stage, during the past 10 years, BIREME's activity has been geared toward the creation and implementation of the Latin American and Caribbean System on Health Sciences Information, with active participation of libraries and information centers. In the second half of the 1980s, BIREME brought extraordinary progress with the creation and dissemination of the LILACS methodology to decentralize management of scientific literature; the creation of Descriptors in Health Sciences vocabulary in

three languages; the mass introduction of information technologies; and, particularly, the LILACS/CD-ROM project, and the operation of LILACS and MEDLINE on BIREME's own computers. To expand the coverage and efficiency of the Regional System's operation, BIREME encouraged the creation and implementation of specialized systems in different areas of the health sciences. This progress was consolidated in the 1990s. It should be noted that BIREME's Internet connection and the celebration of regional Congresses, together with the mass participation of health information professionals of the Region and the developed countries, have contributed to an extraordinary exchange of information and sharing of experiences.

Meanwhile, in the past 3 years, with the growing prevalence of the Internet and its WWW service as a means to organize and disseminate information, the operational model of BIREME and the Regional System have been proven progressively unable to sustain the rate of development of information products and services in the Region as achieved in the late 1980s and early 1990s.

It is true that information methodologies, products, and services created by BIREME at the end of the last decade and related mainly to the scientific and technical literature published in hard copy, are still valid. However, the countries currently demand a new type of technical cooperation revolving around the creation and operation of decentralized information sources through the Internet. This type of cooperation, broader in scope and multimedia in nature, with more value added to serve the needs of specific groups of users and with less mediation through interfaces, makes the direct interaction of users with information sources a viable undertaking.

The obsolescence of the BIREME and the Regional System's operational model coincided with the establishment by the Director of PAHO of the BIREME and Regional System External Evaluation Commission, whose work was carried out during July and August 1997. In its report, the Commission points out the key role that BIREME has played, mainly in the implementation of the Regional System. It recommends its consolidation and enhancement as the coordinating center for the Regional System, together with the strengthening of its leadership in promoting technical cooperation in scientific and technical information.

With the objective of analyzing and monitoring the recommendations of the BIREME External Evaluation Commission report, early in October 1997, a working group convened by HDP/PAHO prepared a document proposing the bases for a workplan for PAHO's technical cooperation in health information. This plan was based on the creation and implementation of the Virtual Health Library, originally proposed to the External Evaluation Commission during its examination of BIREME.

BIREME intends to adopt the Virtual Health Library proposal as the platform for the promotion of technical cooperation in information for the coming years, in harmony with the new organizational and information management paradigms established by the Internet. Thus, BIREME will continue to play a leadership role in the Region.

The creation and implementation of the Virtual Health Library is planned as the fourth stage in the BIREME and the Regional System evolution.

The Virtual Health Library for Latin America and the Caribbean

The creation and implementation of the Virtual Health Library (VHL) is the strategy that BIREME intends to adopt for the promotion of technical cooperation in information toward and among the countries of Latin America and the Caribbean. The objective is to provide an organized and efficient response to the emerging needs of the countries to produce and operate health information sources through the Internet.

The Virtual Health Library is envisioned as the broad of scientific and technical knowledge based in health—entered, organized, and stored in electronic format in the countries of the Region, universally accessible on the Internet and compatible with international databases.

The VHL is simulated in a virtual space on the Internet and consists of a collection or network of health information sources in the Region. Users from different levels and locations will be able to interact and navigate in the space of one or more information sources, regardless of their physical location. The information sources are generated, updated, stored, and manipulated on the Internet by producers, integrators, and intermediaries, in a decentralized manner using common methodologies for their integration into the VHL.

The VHL information sources include health information products and/or services, which are divided into six basic types:

a. Traditional information sources, realigned to operate in a network on the Internet:

- The LILACS system databases and other databases of bibliographic references, made available in their entirety on the Internet, with specific elements to serve the different health sciences specialties, and enriched with links to complementary information sources, particularly databases with full texts and on-line services providing hard copies of documents;

- Databases of directories of health entities in the Region, such as people, institutions, and projects, made available on the Internet, with links to the referenced sites when they exist, and provided, by stages, with interfaces for decentralized updating by those responsible for the referenced entities;

- Factual databases, such as those describing chemical and pharmacological substances, genetic sequences, etc. ;

- Numerical health databases, generated by health management systems, vital statistics systems, epidemiological systems, surveys and demographic censuses, etc.

b. Electronic publications, including the traditional types of scientific and technical literature (journals, monographs, government docu-

ments, annals of congresses, theses, and unconventional documents) enriched with hypermedia and organized in on-line hypertext databases. This is the most important component with respect to the expansion of the traditional library of scientific and technical literature;

c. Multimedia and methodological tools to support education and decision-making. In particular, the VHL will promote the development and operation of tools to support continuing education and distance learning;

d. Push/Selective Dissemination of Health Information services, aimed at responding to the information needs of specific user communities; countless services will be created and operated regionally and in a decentralized manner utilizing the VHL databases;

e. News and lists of discussions on national and international health information, particularly on the implementation of the VHL throughout the Region;

f. Integrating components of the VHL:

- DeCS - Descriptors in Health Sciences, health science terminology that will be utilized to index the VHL information sources in a compatible manner. The DeCS contains more than 23,000 terms, organized and classified, in three languages. In addition to the categories defined in the Medical Subject Headings (MeSH) of the U.S. National Library of Medicine, the DeCS includes specific pub-

lic health categories that are necessary for describing the scientific and technical literature of PAHO and the countries of the Region. Under continuous development to respond to the health sciences dynamic, the DeCS is an integral part of the Unified Medical Language System (UMLS) of the NLM which includes, in addition to the hierarchical organization of the concepts and terms, semantic networks with a view to contributing to the development of specialized systems, particularly with respect to access to information sources. Upon promoting the use of the DeCS as the common language of description of VHL information sources, and upon ensuring its compatibility with the MeSH, it will be possible in the future to use the user-friendly interfaces and specialized systems that are in development in research centers in various parts of the world;

- HIL–Health Information Locator, which includes, on the one hand, the common reference methodology for entering information sources in the VHL and, on the other, tools for searching for and/or locating health information sources through the VHL, regardless of their location, organization, media, and operational interface. In order for the HIL to work, each information source should have its own reference registry. The HIL, operating on this basis of reference, becomes the tool for integration and navigation among the information sources. As an analogy, in the VHL the HIL plays a role similar to that of a traditional library reference service. The HIL reference registry and search tools will be compatible with the methodologies for locating information sources from the governments of the developed countries and will permit

integration of the VHL with the global information infrastructure. Thus, the HIL will permit navigation between the VHL and international information sources;

- Common standards and methodologies directed toward the development of information sources; this includes guidelines, manuals, software, etc. that are in common use for the creation, maintenance, and operation of VHL information products and services.

These six types of VHL components constitute the basic models for information products and services to be provided by both the regional and national centers. Their scope will be able to cover local, national, and regional data and needs.

It will also be possible to enrich, schedule, reformulate, and/or translate the basic information sources into new information products and services, with value added, in order to meet more efficiently the information needs of users from specific communities, for example, scientific research and education, health authorities and administrators at the different levels, direct medical care in its different specialties, media, the general public, etc.

The VHL does not represent a break with, opposition to, or a negation of the information achievements, methodologies, products, and services currently operated by BIREME, the Regional System, and other national and regional entities. Nor does it represent the end of BIREME and the Regional System. On the contrary, the VHL represents the expansion of the entire

infrastructure for the information already amassed in the Region. This expansion is not linear. It represents the gradual adoption of a new paradigm of information management that in a variety of ways solves unsolvable problems or problems with very expensive solutions in the current operating model of BIREME and the Regional System. The following are some of the main aspects of this expansion or change in paradigm:

- access to the information sources without scheduling limitations;
- access regardless of the geographical location of the user and the information sources;
- integration of the functions of storage, preservation, and publication; for example, the collection of the issues of an electronic journal in the VHL simultaneously represents the traditional functions of publication, cataloguing, storage, and preservation;
- a supply of "copies" of documents for everyone all the time, overcoming the limitation of the ratio of one document to one reader at a given time;
- coexistence of information sources on traditional media and in hypertext format, including multimedia components;
- the VHL will permit the establishment of national and regional policies and mechanisms for organizing and maintaining the products in electronic format, ensuring their preservation for the future;
- creation of a coherent, highly efficient platform for technical cooperation through the use of common methodologies and technologies

that facilitate and cut the cost of human resources education and the large-scale provision of information products and services;

- promotion of the necessary and sought after integration of different disciplines, specialties, systems, and initiatives in information and health in the design, creation, and operation of information products and services;

- a driving force for achieving the integration, organization, and dissemination of the information resources generated by the research and education systems, the health program management systems, and vital statistics and other statistical systems;

- existence of quality control mechanisms for the selection of information sources for the Library;

- rapid updating of information sources by minimizing the mechanisms that mediate their generation and publication;

- provision of integrated mechanisms in the information sources for the evaluation of their use and impact;

- platform for the creation, development, adaptation, acquisition, and dissemination of information technologies suited to the different conditions and needs of the countries of the region, maximizing their use in promoting implementation and decreasing the information gaps within the countries, among the countries of the region, and outside the region;

- new opportunity and model to support the learning curve in the use of information technologies to replace the current BIREME and Regional System model;

- opportunity to facilitate and promote the transition between the old and new paradigms of information management in the Region;

- mediating element for the coexistence of the old and new paradigms of information management in the region;

- institutions and/or users without access or with limited access to the Internet will also be able to benefit from the VHL through products and services offered on paper, diskettes, CD-ROM, CD-R, and DVD-ROM.

Implementation of the VHL and its development until it reaches momentum will demand political mobilization and increased awareness from the health authorities and institutions of countries in the Region to ensure that the information initiatives and resources are directed toward the VHL on a priority basis.

Cooperation between the authorities and the PAHO leadership is indispensable for making this mobilization a reality. As an operational arm of PAHO/WHO information policy, BIREME will act as a leading center at the regional level in the promotion and implementation of the VHL, through the creation of strategic alliances and consortia.

Thus, technical cooperation provided by PAHO in regard to scientific and

technical information, especially through the activities of BIREME, should be redirected toward implementation of the VHL. In particular, it will fall to BIREME to promote discussion and promotion of the VHL in the centers of the Regional System, so the national systems begin their transition as soon as possible toward the creation and operation of the VHL with local information products and services.

BIREME has established the following lines of action for the implementation of the VHL, in close cooperation with the countries and the PAHO programs:

a. Mass promotion of the VHL in the countries, at PAHO, and in the Region as a whole, with a view to establishing alliances, redirecting resources, and mobilizing new resources, including:

- the Latin American and Caribbean System on Health Sciences Information;
- the various PAHO agencies involved in technical cooperation in information, including the Programs, the Pan American Centers, and Representative Offices;
- the national authorities in the sphere of health;
- the national science and technology institutions;
- regional technical cooperation institutions related to science and technology;
- national and international health promotion agencies.

b. Realignment of the information products and services that currently exist in the Region, so they work within the VHL, including:

- access to databases via the Internet / WWW utilizing a common operating interface;

- implementation of the procedure for requesting photocopies via the Internet;
- human resources education to support the realigned products and services.

c. Development of electronic publications in the Region utilizing a common methodology for their preparation, storage, dissemination, and evaluation, including, on a priority basis:

- human resources education in electronic publications methodology;
- creation of the electronic journal database on health sciences;
- creation of databases of government publications on health in electronic format.

d. Development of the Health Information Locator, including:

- establishment of the common reference registry of information sources;
- development of the search tools;
- implementation of the HIL.

e. Forging of alliances and development of consortia for establishing and implementing projects for the development of the other components of the Virtual Health Library, including:

- tools to support education and decision-making;
- push services/selective dissemination of information;
- health information news centers and agencies.

Each of these lines of action involves different degrees of development and adaptation of the information methodologies and technologies appropriate to the Region, mobilization of institutions and professionals, training of

human resources, and improvement of the national health information infrastructures.

Plan of Action for Implementation of the Virtual Health Library

This plan of action is on the lines of action established by BIREME for implementation of the Virtual Health Library.

The plan is centralized with respect to the actions considered essential for VHL implementation. It is not a question of an exclusive plan, since the VHL operation, at least in principle, is decentralized and autonomous. In this regard, the main objective of the plan is to implement the VHL and sustain its initial development until it acquires its own momentum.

This plan will be discussed within several PAHO entities and at the Regional System Meeting in Costa Rica, with a view to its improvement.

The plan is organized along five lines of action:

- Promotion and marketing of the Virtual Health Library
- Realignment of traditional products and services
- Electronic publications
- Development of the HIL–Health Information Locator
- Development of the other components of the Virtual Health Library

Each line of action is comprised of a series of related macro activities.

For their implementation, BIREME will group the activities of the plan into different projects that will each include a detailed timetable of activities, implementation methodology, and financial resources.

Implementation of the plan is expected within a three-year period, beginning in April 1998, after the Regional System Meeting in Costa Rica. By the end of the period 30 March 2001, the Virtual Health Library should be fully operational.

The following pages present the lines of action of the plan, including a description of the main actions and institutions involved.

Line of Action I. Promotion and Marketing of the Virtual Health Library

# Description of the principal actions	Responsibility and countries involved	Timetable					
		April 98-March 99		April 99-March 00		April 00-March 01	
1 Preparation of a background document on the VHL concept and the Plan of Action, "Toward the Virtual Library" for presentation and discussion at the VI Meeting of the Latin American and Caribbean System on Health Sciences Information, to be held in San José, Costa Rica, at the end of March 1998. This document, to be prepared by BIREME, will be complemented by documents and presentations by the Centers of the Regional System on specific aspects of VHL implementation. Based on this document, the national systems will prepare the national plans and projects for creation and implementation of the VHL with national health information sources. Similarly, the specialized regional systems, the information systems linked to PAHO programs, and the PAHO information centers can prepare plans and projects for their integration into the VHL. In addition, this document will serve as a reference for the preparation of articles and lectures to spread the word about the VHL.	BIREME Regional System						
2 Preparation and implementation of a VHL promotion and marketing plan to familiarize professionals and the health and information area authorities of the region and national and international technical cooperation agencies with the concept and the proposed Plan of Action. This will include marketing activities, products, and strategies. Program implementation will be carried out by BIREME, the Regional System Centers, and the PAHO programs, and will include all possible dissemination mechanisms, such as direct mail, congresses and meetings, posters, Internet sites, etc.	BIREME Regional System PAHO Programs						
3 Sensitization of national authorities at the different levels to the importance of the VHL, with a view to accelerating a redirection of activities and resources toward its construction and development. Sensitization of health promotion and cooperation agencies, with a view to directing project approval and the investment of new resources toward the VHL.	Director PAHO PAHO Programs PWR BIREME Regional System						

Line of Action II. Realignment of Traditional Products and Services

# Description of the principal actions	Responsibility and countries involved	Timetable					
		April 98-March 99		April 99-March 00		April 00-March 01	
1 Training courses and technical assistance for implementation of cooperative information services via the Internet in the countries, utilizing a common interface. Also includes the PWRs' and Pan American Centers' information systems. These services will provide access to bibliographic databases, directories, etc. and access to the original document. Includes missions to 8 countries, 1 for Central America and the Latin Caribbean and 1 for the English speaking Caribbean. The training courses will be offered in cooperation with the national coordinating centers, the national commissions on science and technology, the Pan American Centers, and PAHO programs	BIREME Regional System PWRs Pan American Centers PAHO Programs						
2 Implementation of a common interface on PAHO's Web site for cooperative services to access bibliographic databases and the original document	BIREME HBI PAHO Programs						
3 Monitoring actions 1 and 2 via the Internet and missions to the countries	BIREME Regional System HBI PAHO Programs						

Line of Action III. Electronic Publications

# Description of the principal actions	Responsibility and countries involved	Timetable					
		April 98-March 99		April 99-March 00		April 00-March 01	
1 Implementation of the common LILACS methodology for electronic publication of all types of scientific literature (journals, monographs, annals of congresses, theses, government documents), starting with the electronic journals project in development by BIREME (SciELO) and pilot implementation in 3 countries.	BIREME Argentina and Chile						
2 Cooperative implementation and operation of 100 titles of Latin American and Caribbean electronic journals on health. Decentralized training and operation in at least 10 countries. This project involves alliances and associations with the national commissions on science and technology and science publishers.	BIREME Regional System CONICYTs Editors						
3 Cooperative implementation and operation of databases for monographs, especially government documents. Decentralized training and operation in at least 7 countries. This project involves the active participation of the ministries of health.	BIREME Regional System PAHO Programs						

Line of action IV. Development of the HIL–Health Information Locator

# Description of the principal actions	Responsibility and countries involved	Timetable					
		April 98-March 99		April 99-March 00		April 00-March 01	
1 Definition and preparation of the methodology for the HIL registry and of the tools for retrieval from VHL information sources. Pilot implementation in Cuba and BIREME. Presentation and discussion of the HIL at the VI Meeting of the Latin American and Caribbean System on Health Sciences Information to be held in San José, Costa Rica. Development, improvement, and maintenance of the methodology in keeping with international progress in information source locator methodologies and systems.	BIREME CCN of Cuba Regional System						
2 Pilot implementation of HIL in 3 countries.	BIREME CCN of Cuba Regional System						
3 Training and technical assistance in the utilization of HIL methodology for the entry of information sources in the VHL and implementation of national servers for operation of the HIL entries. Mission in 8 countries, 1 for Central America and the Latin Caribbean and 1 for the English-speaking Caribbean. Includes specialized regional information systems.	BIREME Regional System PWRs						

Line of Action V. Alliances and Consortia for the Development of Other VHL Components

# Description of the principal actions	Responsibility and countries involved	Timetable					
		April 98-March 99		April 99-March 00		April 00-March 01	
1 Definition and preparation of a basic set of projects for the development, selection, procurement, and utilization of support tools for education and decision-making. Mobilization of resources for their implementation. The projects should focus on tools with high visibility and broad application that can serve as models to promote decentralized development. This action goes beyond the traditional scope of BIREME and the Regional System and will demand the establishment of alliances, consortia, and cooperative agreements with other entities in the area of health and scientific and technical information.	BIREME Regional System Research and development Institutions of the countries, PAHO Programs						
2 Development of the methodology for Selective Dissemination of Information (SDI) on health based on the Internet PUSH methodology. Pilot operation of the methodology within BIREME and establishment of cooperative projects with specialized institutions in the area of health in Latin America and the Caribbean for implementation and decentralized operation of PUSH/SDI servers. The SDI/PUSH services should evolve rapidly toward self-sustainability.	BIREME Regional System PAHO Programs						
3 Promotion of news centers and/or agencies on the subject of health information and in particular on the implementation of the Virtual Health Library. The news centers and/or agencies will be able to cover specific health areas, for example, news on environmental information. Institutions and consortia of institutions will operate the news centers and/or agencies.	BIREME Regional System Health and communication institutions						

The VHL implementation plan has already made progress and taken constructive preliminary steps that make it possible to anticipate a high degree of success in its implementation:

a. Progress in the formulation of the VHL for Latin America and the Caribbean as the platform for technical cooperation in health information among and toward the countries of the region. The reaction to the VHL has been extraordinarily positive in the various presentations that BIREME has made to specialized audiences;

b. The emerging demand of the countries of the region for technical cooperation that the VHL will efficiently address, mainly with regard to overcoming and reducing information gaps among the countries of the region and between them and countries outside the region, using appropriate technologies;

c. BIREME's development of methodologies and technologies for operating Internet information sources makes it feasible to begin an immediate realignment of the traditional products and services of the regional system centers so they operate in a network;

d. The methodology for the preparation, storage, dissemination, and evaluation of electronic journals, whose development BIREME is completing jointly with FAPESP and 10 Brazilian scientific editors, makes it possible to put the databases of electronic health science journals into immediate operation;

e. Together with the CCNs of the Regional System, BIREME is promoting cooperative programs for the development of VHL components;

f. Implementation of the project for the cooperative development of the Health Information Locator (HIL) by the National Coordinating Center of Cuba and BIREME;

g. BIREME is participating in a consortium with the library systems of the public universities of São Paulo for the procurement and operation of electronic journal collections from commercial publishers; this project involves a total of approximately US$1.5 million; the experiences in the implementing this consortium will be transferred and shared, as will information on other activities in the region;

h. The preparation of the BIREME internal reorganization plan. Implementation of this plan will promote the redirection of human and financial resources to units devoted to technical cooperation, minimizing the activities connected with the local library;

i. BIREME is updating its entire information technology infrastructure with the PAHO extrabudgetary funds provided at the end of 1997; this will make the efficient operation of databases and the regional cooperative services a viable undertaking.

Finally, we should point out the ability of BIREME and the Regional System, demonstrated over the past 30 years, to promote the changes necessary for the adoption of new paradigms, as is the case with the creation and implementation of the VHL.

Biblioteca Virtual